



# FasTracks Plan

April 22, 2004



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## Preface

On behalf of the Regional Transportation District Board of Directors and staff, we welcome this opportunity to present to you the FasTracks Plan, our comprehensive plan for high quality transit service and facilities in the Denver metropolitan region. It is the culmination of an extensive planning and development process involving the general public and all the local cities and counties over the last five years. It represents our vision for a better transportation system by providing an enhanced region-wide, reliable and safe transit system.

We at RTD are dedicated to deliver to the citizens of the metro region the highest quality and most cost effective transit services today and in the future. Over the last four years, from 2000-2003, RTD has continued to improve the services that it offers to the public by providing:

- **The opening of two new successful light rail lines, the Southwest Corridor and the Central Platte Valley Spur on time and within budget.** Ridership on these lines continue to exceed projections. RTD's next light rail line, the Southeast Corridor, or T-REX, is under construction in a joint partnership with the Colorado Department of Transportation (CDOT) and is also on time and within budget.
- **Overall improvements to the RTD Bus System.** These include enhanced fixed route service as well as service diversification to include community

based transit systems and call-n-Ride service. This has been accompanied by an aggressive bus fleet modernization program that will reduce the average age of our bus fleet from 12 years in 1999 to 5 years in 2004. RTD's access-a-Ride paratransit system continues to grow and is responsive to the disabled community.

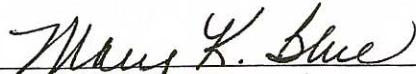
- **An enhanced accident prevention program that has resulted in a 54 percent reduction in accident rates between 2001 and 2002.** To date, in 2003, accident numbers have been reduced an additional 32 percent below last year's levels. This reduction was achieved through comprehensive management and on-going driver training.
- **Overall prudent financial management of RTD activities.** Between 2000 and 2002 Worker's Compensation claim amounts were reduced by 55 percent by tightly controlling this process thereby saving millions of dollars. Enforcement of existing attendance policies has reduced absenteeism among bus operators by 5% saving personnel costs. Beginning in 2001, RTD reacted early and effectively to slumping economic conditions thereby minimizing the impact of reduced revenues for our customers and our employees.

These achievements, as well as many others, led to RTD being named this year as the best transit agency in North America by the American Public Transportation Association (APTA). This award is a testimony to the hard work

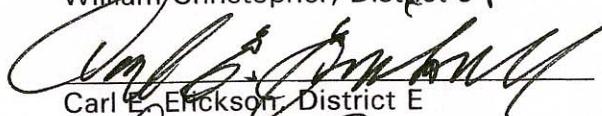
award is a testimony to the hard work and dedication of the employees at RTD who, on a daily basis, put the customer first.

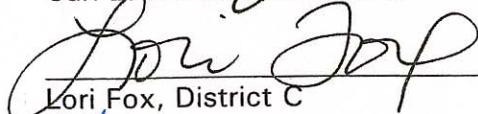
RTD intends to continue this record of service and achievement by providing to the metro area citizens a transit plan that will give residents transportation choices on how they will travel. The FasTracks Plan provides new and expanded rail and bus rapid transit lines, enhancements to the current bus system including suburban-to-suburban bus service, over thirty new and expanded park-n-Rides, and other transit facility improvements including a major downtown multimodal center at Denver Union Station. All of these major components are integrated

  
Clarence W. Marsella  
General Manager

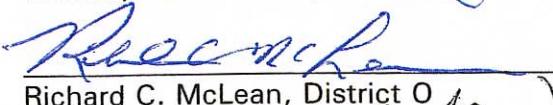
  
Mary K. Blue, District I

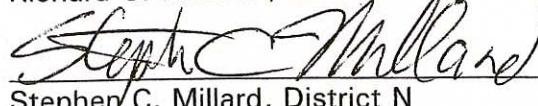
  
William Christopher, District J

  
Carl E. Erickson, District E

  
Lori Fox, District C

  
Christopher Martinez, District B

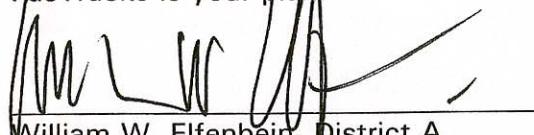
  
Richard C. McLean, District O

  
Stephen C. Millard, District N

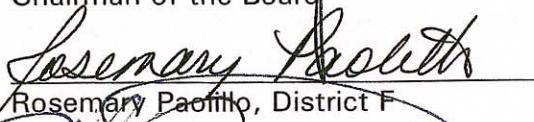
to provide seamless travel throughout the metropolitan area. So, whether you are traveling from home to work, to school, to the doctor, or to a sporting or entertainment event, transit can be your best option.

RTD wishes to thank all of our customers, the local communities and the general public for their participation in the planning process for the FasTracks Plan. Your input was invaluable to development of the final plan components. RTD will continue to ask communities to tell us what they want and we will do everything we can to carry out their requests.

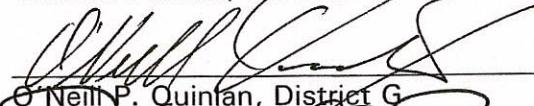
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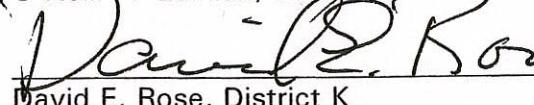
  
William W. Elfenein, District A

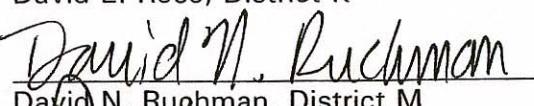
Chairman of the Board

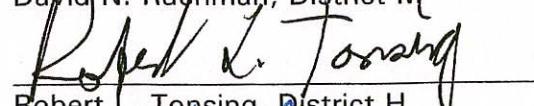
  
Rosemary Pacitto, District F

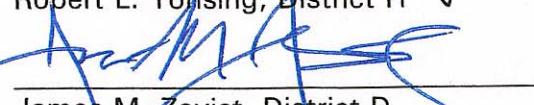
  
Wallace Pulliam, District L

  
O'Neill P. Quinlan, District G

  
David E. Rose, District K

  
David N. Ruohman, District M

  
Robert L. Tonsing, District H

  
James M. Zavist, District D

## Executive Summary

### 1. Overview of FasTracks

FasTracks is RTD's twelve-year comprehensive plan for high quality transit service and facilities in the region. FasTracks is a proactive plan that responds to the growing transportation needs of the Denver metropolitan region by providing an enhanced region-wide, reliable and safe transit system.

According to the Denver Regional Council of Governments (DRCOG), the Denver metropolitan region is expected to add more than 900,000 people and 600,000 jobs by 2025. This growth will place a tremendous strain on the region's already congested transportation system. Weekday vehicle miles of travel are expected to increase from 58 million in the year 2001 to 95 million by the year 2025, a 64 percent increase. As part of its Fiscally Constrained 2025 Interim Regional Transportation Plan (RTP), DRCOG has noted that this combination of population growth and vehicle miles traveled will increase severe congestion by 89 percent even with the transportation improvements that are scheduled for implementation. Person hours of delay are predicted to increase by two times the current amount. By 2025, we will have more traffic than our existing transportation system can handle.

In its *2003 Annual Urban Mobility Report*, the Texas Transportation Institute (TTI) rated Denver as the third most congested city in the United States. The report also states that "it would be almost impossible to maintain a constant congestion level with road

construction only" and that "peak period public transportation service during congested hours can improve the transportation capacity." The report indicates that "Public transportation lines that do not intersect roads can be particularly reliable as they are not affected by weather, road work, and other unreliability producing events."

FasTracks also responds to *Metro Vision*, the Denver region's plan for future growth and development. The second of the six core elements of *Metro Vision* states that the region must create "a balanced multimodal transportation system" which includes "an extensive fixed guideway transit system and bus transit."

Finally, FasTracks responds to current sentiment on transportation needs within the metropolitan area. In a recent survey entitled *2003 Statewide Customer Survey – Results on Transportation Issues in Colorado* conducted by the Colorado Department of Transportation (CDOT), the lack of public/mass transportation was identified as one of the top transportation issues. The CDOT survey also states that if transportation funds became available, in the metro area, the highest priority for spending that money should be on light rail. FasTracks provides the opportunity to implement rapid transit by funding a region-wide system of light rail, commuter rail and bus rapid transit in the next twelve years.

FasTracks has three core goals:

***Provide Improved Transportation Choices and Options to the Citizens of the District.***

Additional transportation choices add to the region's quality of life. Reduced reliance on a single mode of transportation by providing additional, convenient transit options gives individuals choices on how to travel and where to live, work and play. FasTracks provides over 119 miles of new rail transit, contributes to the construction of 18 miles of bus rapid transit and greatly enhances the bus network to support investments in rail, serve suburb-to-suburb trips, and provide local and regional service.

***Increase transit mode share during peak travel times.***

Existing congestion during peak travel times of the day is frustrating for many drivers and is only expected to get worse as the region continues to grow. Providing viable transit options during the peak travel times will help provide relief for frustrated drivers. FasTracks is projected to increase the percentage of people taking transit during the peak hours from 11 to 22 percent in the region's major transportation corridors where congestion is worst.

***Establish a proactive plan that balances transit needs with future regional growth.***

The Denver metropolitan region is expected to grow from 2.46 million (2001) people to 3.39 million in 2025. This growth requires an enhanced transit system to help meet the future transportation needs of the region. FasTracks responds to this need and provides opportunities to focus development near transit to take advantage of the increased capacity and convenience of the enhanced system.

## **2. Key Components of FasTracks**

Significant planning efforts and public involvement have gone into development of the FasTracks Plan. It anticipates building a number of major components described below. Costs are estimated based on the best data currently available. Transit elements shown are based on completed planning and engineering work and environmental studies, or work that is ongoing at the time of publication. While specific details of the plan may change based on unanticipated economic circumstances over the next twelve years, and the results of the environmental, planning, and engineering work that is still ongoing, RTD expects to deliver the major transit corridors and related improvements within the overall budgetary framework and timeframes set out in the plan.

- Rapid Transit - FasTracks will provide new and expanded rapid transit in nine major travel corridors by funding over 119 miles of light rail and commuter rail and contributing to the construction of 18 miles of bus rapid transit. The rapid transit component includes expansions and extensions to existing light rail lines, construction of new light rail and commuter rail lines, and construction of the stations and other improvements for bus rapid transit. (**Figure ES-1**)
- park-n-Rides - One of the most successful elements of the RTD system is the extensive park-n-Ride system throughout the District. RTD has 65 park-n-Rides today with over 21,000 spaces that are served by both buses and rail. (When

# Rapid Transit Corridors

## FASTTRACKS RTD

### Overview - Rapid Transit

137 Additional miles of rapid transit  
119 miles Rail  
18 miles Bus Rapid Transit

57 Additional rapid transit stations

**\$4.7B** Capital cost (inflated dollars)

21,213 Additional parking spaces at transit park-n-Rides  
Enhanced bus service and FastConnects throughout the region

### Corridors

#### Central & CPV Corridor Enhancements

Vehicle Type: Light Rail  
Length (miles): 7.1 (existing)/0.8 (new)  
Stations: 18 (existing)/2 (new)  
Parking: 1,685 (existing)  
400 (new)  
Capital Cost: \$118.4M\*  
2025 Ridership: 31,800 - 37,200

#### East Corridor

Vehicle Type: Commuter Rail/DMU  
Length (miles): 23.6  
Stations: 5  
Parking: 2,848 (existing)  
681 (new)  
Capital Cost: \$702.1M\*  
2025 Ridership: 30,400 - 35,600

#### US 36 Corridor/Longmont Extension\*\*

Vehicle Types: Commuter Rail/DMU, BRT  
Length (miles): 38.1 (rail)/18 (BRT)  
Stations: 7 (rail)/6 (BRT)  
Parking: 3,975 (existing)  
4,393 (new)  
Capital Cost: \$791.4M\*  
2025 Ridership: 8,600 - 10,100 (rail)  
16,900 (BRT)

#### West Corridor

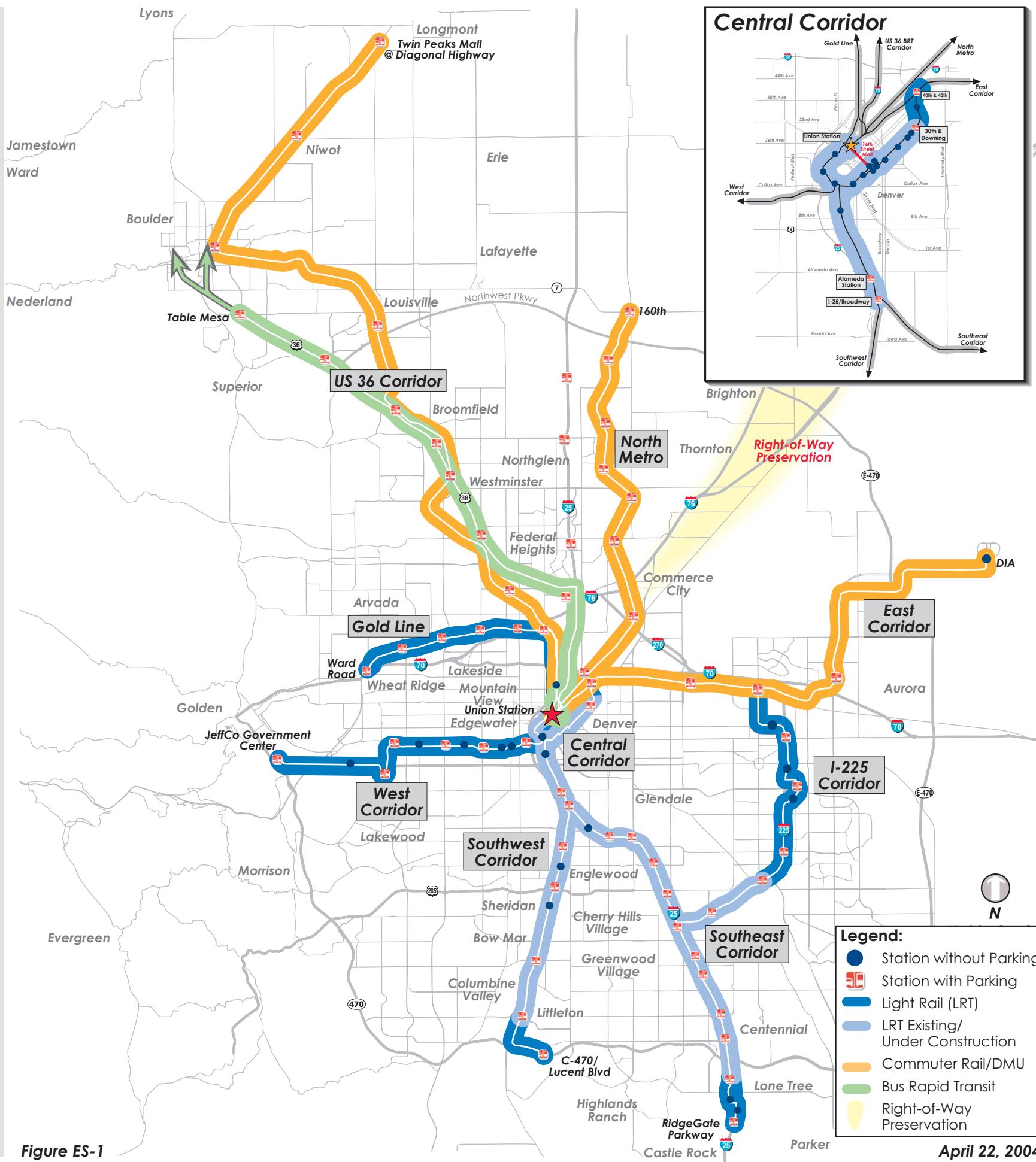
Vehicle Type: Light Rail  
Length (miles): 12.1  
Stations: 11  
Parking: 646 (existing)  
5,054 (new)  
Capital Cost: \$508.2M\*  
2025 Ridership: 31,200 - 36,500

#### Southeast Corridor Enhancements

Vehicle Type: Light Rail  
Length (miles): 19.1 (under construction)/2.3 (new)  
Stations: 13 (under construction)/3 (new)  
Parking: 2,079 (existing)  
4,883 (under construction)  
2,520 (new)  
Capital Cost: \$183M\*  
2025 Ridership: 51,100 - 59,800

\* inflated costs

\*\* FasTracks investments include construction of BRT slip ramps, park-n-Rides and stations, and a contribution toward HOV lanes. HOV lane construction is the responsibility of CDOT.



completed in 2006, T-REX will add 9 more park-n-Rides, and over 5,000 new spaces.) FasTracks will provide funding to increase the number of parking spaces by over 21,000. These spaces will be added to existing park-n-Rides as well as 31 new park-n-Rides to serve growing areas of the metro region. (**Figure ES-2**).

**Enhanced Bus Network and Transit Hubs** - FasTracks offers a family of bus services tailored to individual markets and linked together to create a comprehensive and seamless network. RTD will continue to operate the full array of bus service it offers today, and will offer two new services. Recognizing that employment, residential, commercial and educational opportunities are dispersed throughout the region, FasTracks includes a comprehensive network of suburb-to-suburb bus service linked together with "FastConnects" or timed transfers at transit hubs throughout the region. The FastConnects concept schedules buses and trains to arrive at transit stations, stops and park-n-Rides at the same time, minimizing the time a passenger has to wait to transfer to another vehicle. (**Figure ES-3**). The second new service offered by FasTracks is an extensive system of bus feeder service to rapid transit stations. This service will provide neighborhoods near rapid transit stations a convenient option for accessing rail or bus rapid transit lines.

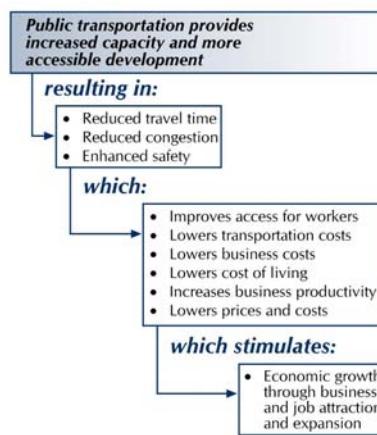
- **Downtown Multimodal Center** - Denver Union Station (DUS) is the proposed location for a Downtown Multimodal Center, a centralized intermodal facility that provides

access to all parts of the Denver metro region. As the central intermodal hub for the region, DUS will provide access to nearly every rapid transit corridor included in FasTracks as well as Regional, Express and Local bus service, the 16<sup>th</sup> Street Mall, Amtrak, the Ski Train, Greyhound, and the new Downtown Circulator. Elements of DUS that are part of FasTracks include: construction of below grade light rail access into DUS, at-grade commuter rail access into DUS, and construction of components to facilitate transfers such as underground passenger waiting areas, concessions, and restrooms. (**Figure ES-4**)

- **Transit facilities and amenities** - designed to improve passenger safety, convenience and use of the transit system.

### 3. Benefits of FasTracks

FasTracks will provide broad-reaching benefits to the region. In addition to the direct transportation and mobility benefits, FasTracks will also contribute to economic development, improve air quality and promote smart growth. The flow chart below shows the relationship between the transportation benefits and economic benefits that FasTracks can provide.



# park-n-Rides

## FASTTRACKS RTD

### EXISTING, IMPROVED, AND NEW park-n-Rides

Corridor	Existing/ Planned/ Under Construction Spaces	New Spaces at Existing p-n-Rs	Spaces at New p-n-Rs	Total
Southwest Corridor & Extension	2,597	440	1,000	4,037
Southeast Corridor & Extension	6,962	520	2,000	9,482 <sup>1</sup>
West Corridor	646	354	4,700	5,700
East Corridor	2,848	0	681	3,529 <sup>1</sup>
Gold Line	711	400	1,650	2,761
I-225 Corridor	1,225	0	1,800	3,025 <sup>1</sup>
North Metro Rail	83	17	3,000	3,100
North Metro Bus	2,909	0	750	3,659
US 36 Rail/Longmont Extension	0	0	2,960	2,960
US 36 Bus Rapid Transit	3,975	1,133	300	5,408
Central Corridor	1,685	0	400	2,085 <sup>1</sup>
Other park-n-Rides	4,105	0	0	4,105
<b>Grand Total<sup>1</sup></b>	<b>26,521</b>	<b>2,864</b>	<b>18,291</b>	<b>47,676</b>

<sup>1</sup> Corridor parking totals for the East, Central and Southeast Corridors reflect shared parking at connecting stations including Nine Mile (1,225 spaces shared between Southeast and I-225 Corridors), Peoria/Smith Road (550 spaces shared between East and I-225 Corridors), 40th and 40th (400 spaces shared between East and Central Corridors). The Grand Total parking numbers subtract out the shared parking at connecting stations to prevent double counting.

N  
Not to Scale

**Legend:**

- Existing/Under Construction p-n-R
- Improved p-n-R
- New p-n-R
- Right-of-Way Preservation

April 22, 2004



Figure ES-2

# Suburb to Suburb Bus Service with FastConnects

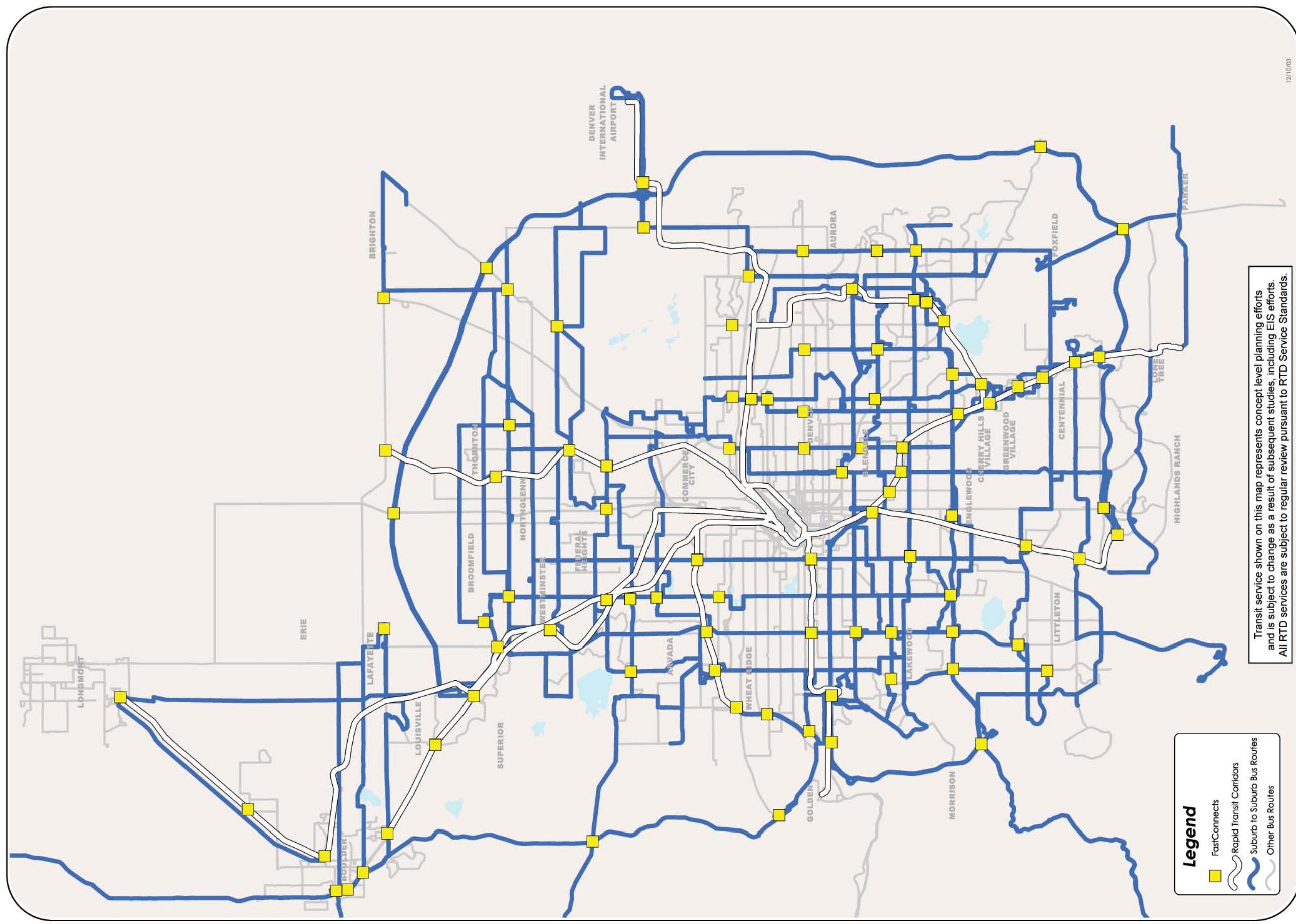
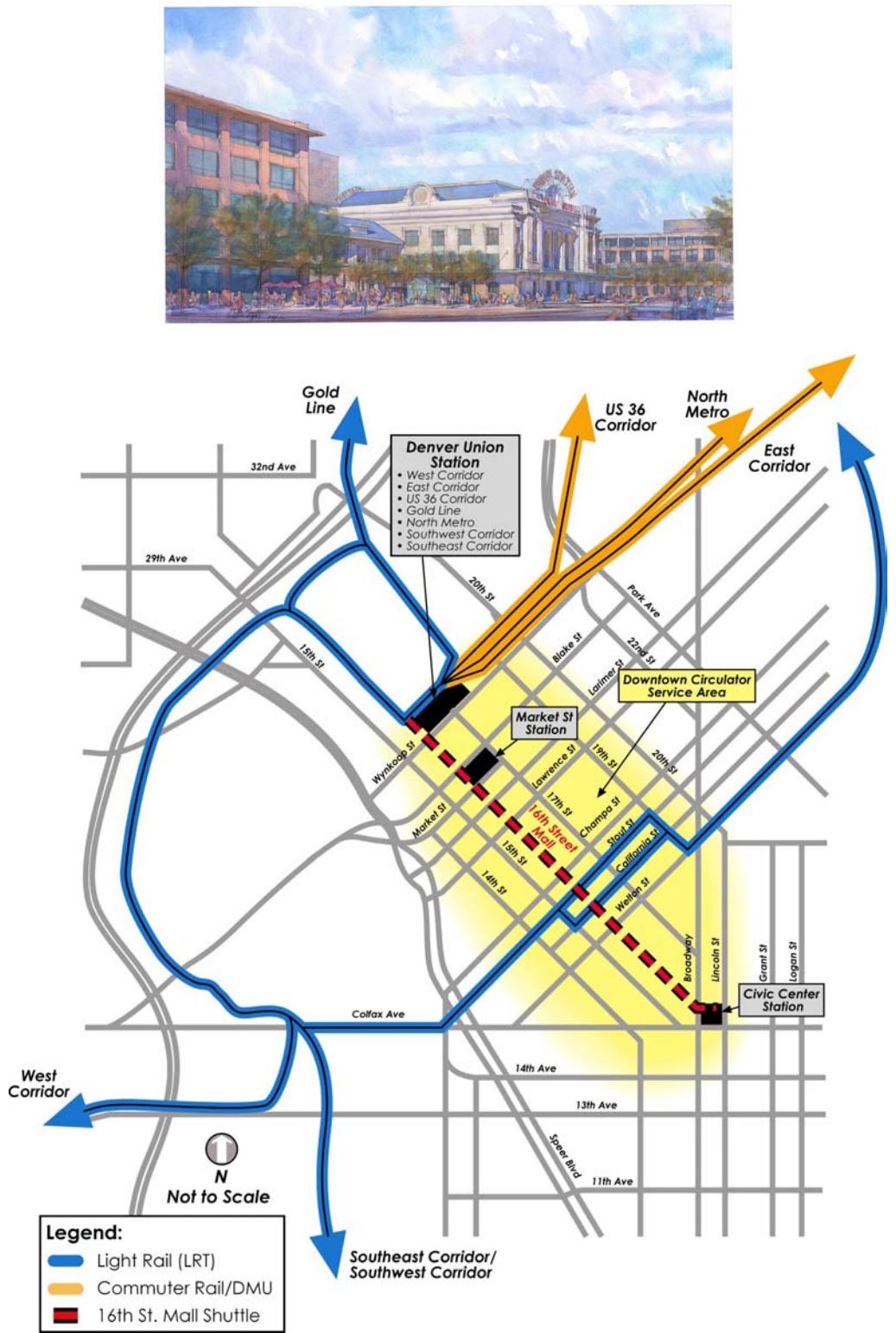


Figure ES-3

April 22, 2004

# Suburb to Suburb Bus Service with FastConnects

Figure ES-4: Downtown Denver Transit Connections



The 2003 *Annual Urban Mobility Report* prepared by the Texas Transportation Institute reported 36 annual hours of delay per person in the Denver area in 2001. The same report also indicated that 60 percent of the freeway lane miles in the Denver area were congested during the peak period in 2001. Delay and congestion are projected to increase significantly in the future. FasTracks provides a fast alternative to driving in the major highway corridors.

**Travel Times/Speeds** - With the FasTracks Plan, it will be faster to travel by transit than by auto to key destinations during the peak times. As shown in **Figure ES-5**, most transit travel times are significantly less for rapid transit than for autos in 2025. With FasTracks, about 474,000 fewer vehicle miles would be driven each weekday in the region in the year 2025. Because of the reduction in vehicle miles driven, highways adjacent to the rapid transit corridors will generally operate slightly faster during rush hours and through traffic on nearby roads will also decline.

- **Safety/Reliability** - Transit, particularly rail and bus guideway, is much more dependable and reliable in inclement weather and is not subject to highway incident related traffic. Additionally, compared to road systems, transit systems are significantly safer. Generally, trips with similar destinations result in 200,000 fewer deaths, injuries and accidents when made by public transit than by car, adding up to between \$2 billion and \$5 billion per year in safety benefits.
- **Peak Hour Mode Split** – The FasTracks Plan will increase the percentage of people taking transit during the peak hours from 11 percent today to over 22 percent on

congested highways. Ridership trends on the RTD's current light rail system support the forecasts. Nearly 60 percent of new riders on the Southwest Corridor use light rail at least three days a week. Moreover, 78 percent of light rail riders had a vehicle to use for this trip. More trips on transit means fewer cars on the road. One full bus can remove 60 cars, one full light rail vehicle can remove 125 cars from the road.

### **Economic Growth and Development**

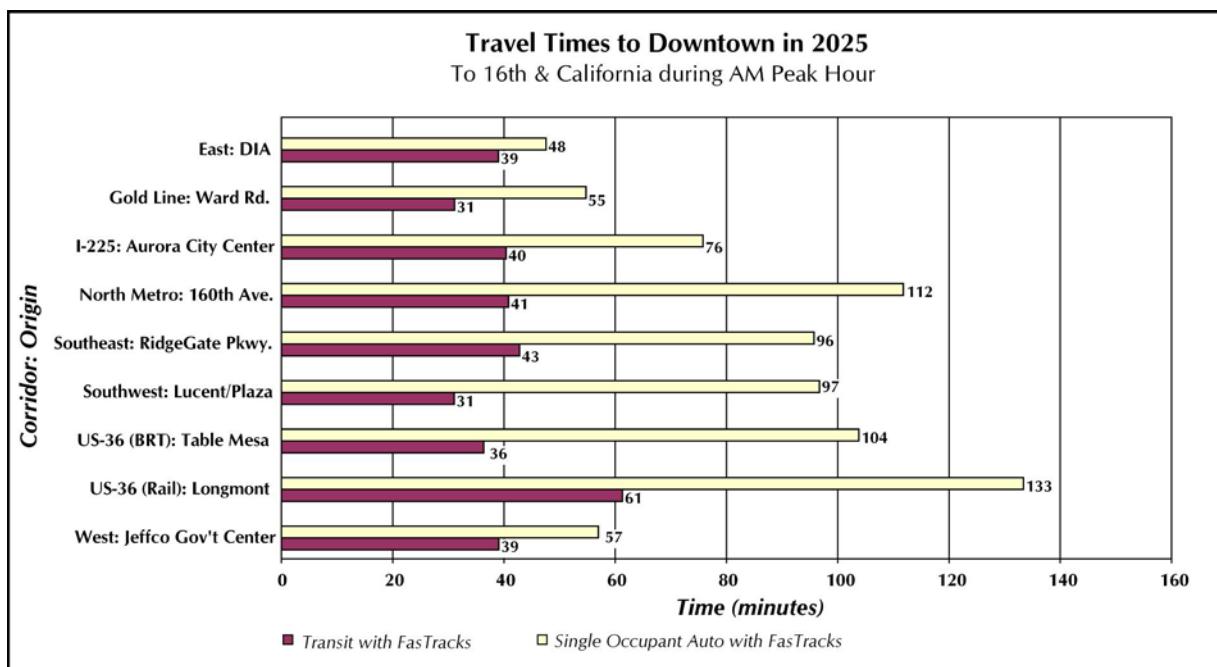
There are a number of positive impacts to the regional economy with FasTracks. Sprawl and growth continues to be a concern to most metro area residents. FasTracks promotes smart growth and higher density development along transit corridors where it is consistent and appropriate and supported by local cities and counties and their citizens.

- **Transit Oriented Development** - Opportunities for transit oriented development around rail and bus stations have been shown to increase property values. This has occurred locally at Englewood City Center Station on the Southwest Corridor. The Alexan City Center apartments, a transit oriented development along the Southwest light rail line recently sold for \$5,000 to \$10,000 more per unit due to their location next to light rail. In the Southeast Corridor/ T-REX project, which is currently under construction, approximately 50 acres directly adjacent to the Bellevue Station have been rezoned from open space to transit mixed use.
- **Increased Economic Activity** - FasTracks in the short term will provide increases in employment

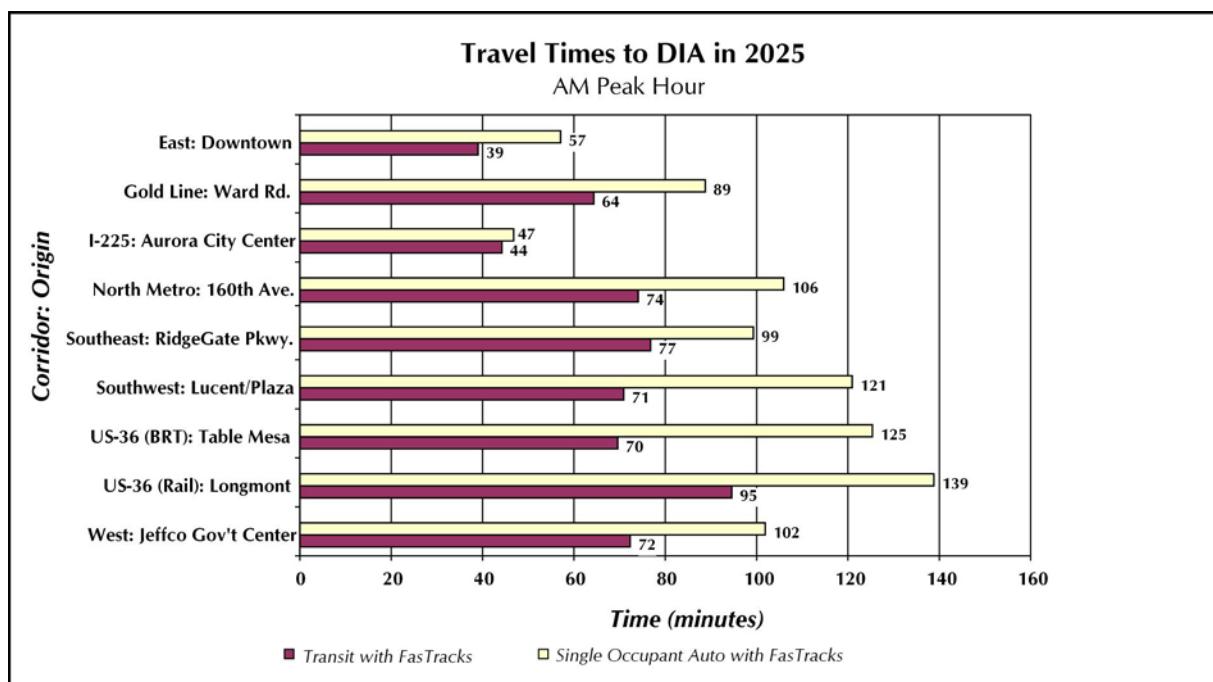
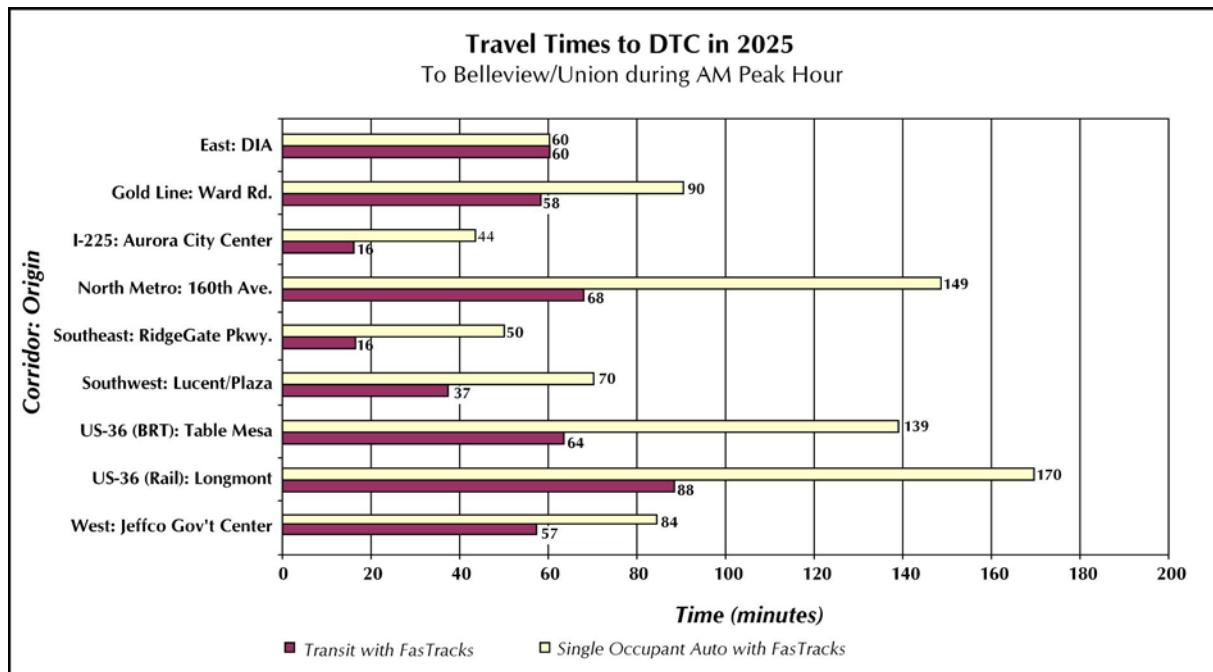
and disposable income through the creation of many new construction jobs. This is consistent with the T-REX project where over 1,400 local

jobs have been added to the economy. Regional economic activity will increase as a result of FasTracks.

**Figure ES-5: Comparison of 2025 Peak Travel Times for Auto and Transit**



**Figure ES-5: Comparison of 2025 Peak Travel Times for Auto and Transit (continued)**



In the long term, the implementation of FasTracks will provide the needed infrastructure to sustain our economy by creating a livable environment that will be attractive to business and development. In Dallas, Texas, the light rail starter line generated over \$922 million in development, surpassing the \$860 million cost of the project. Additionally, the DART system in downtown Dallas contributed to a 30 percent jump in retail sales between mid-1997 and 1998, compared to a 3 percent rise citywide.

- Economic Benefits to Individuals and Businesses – Transit can save commuters money in transportation expenditures by reducing the travel commute times and the cost of commuting. Studies have shown that public transportation-intensive metropolitan areas save \$22 billion annually in transportation costs. According to DRCOG, by 2025, 548,000 jobs, or 26% of all jobs in the region, will be within a one-half mile walk of a rapid transit station with FasTracks. With a short bus ride, this job accessibility grows to 46%. Additionally, 12% of all households will be within walking distance of a rapid transit station, and 86% will be within a 5 mile drive of a rapid transit park-n-Ride. Many cities are finding that businesses are considering transit service a key factor in location decisions.

#### **Environmental Benefits**

FasTracks will provide environmental benefits to the region in a number of areas.

- Air Quality – According to DRCOG, the FasTracks plan will have a net positive impact on the amount of

Carbon Monoxide, small particulates (called PM<sub>10</sub>), and Volatile Organic Compounds emitted into the region's air. DRCOG also projects a slight increase in Nitrogen Oxide emissions, but the overall impact of the FasTracks plan on the region's air quality is positive and will increase over time as transit ridership increases.

- Energy Conservation – Implementation of the FasTracks Plan will also contribute to energy conservation. A bus with as few as seven passengers is more fuel efficient than the average car with one occupant used for commuting. The fuel efficiency of a fully occupied rail car is 15 times greater than the typical automobile. For every passenger mile traveled, public transportation is twice as fuel-efficient as autos and trucks. Nationally, if 1 in 10 Americans used public transportation regularly, the U.S. reliance on foreign oil could be cut by more than 40 percent.

#### **4. Development/Refinement of Plan Concept**

Since 1994, RTD has conducted a number of planning and environmental studies for major transportation corridors, designed and built three new rapid transit lines (Central Corridor, Southwest Corridor and Central Platte Valley), and initiated construction with CDOT on the T-REX (Southeast Corridor) light rail and highway program which will open in 2006. Additionally, RTD partnered with CDOT to develop capital cost estimates for regional transportation improvements, conducted public outreach, and worked with financial consultants to examine long term funding options. A brief summary of these key inputs is described below.

### **Corridor Planning and Environmental Studies**

RTD conducted extensive studies for all six new and three enhanced transit corridors that are included in the FasTracks rapid transit component. These included Major Investment Studies for the East, West, Gold Line, US 36, I-225 and North Metro Corridors, an Environmental Impact Statement for the Southeast and West Corridors, Feasibility Studies for the Southeast (Lone Tree) and Southwest Corridor Extensions, and operational analyses for the Central Corridor. From 1998-2001, RTD also conducted a Twenty Year Transit Needs Assessment and System Plan to insure that financial investments are being made to maintain RTD's existing assets and to insure that individual corridor recommendations coordinate with future region-wide service level requirements. The draft FasTracks Plan adopted by the RTD Board in the summer of 2001 was built upon the foundation of the long-term transit needs assessment and plan that included the detailed work of the planning and environmental studies.

### **Community Outreach/Public Input and Progress of the FasTracks Plan**

A survey to gauge interest in transit-related improvements for the metro area was also conducted by the Colorado Department of Transportation, RTD and the Transit Alliance (a group of metro area local municipalities and other business interests) in July of 2001. The results of this survey indicated a 78% approval rating for improving transit in the metro area. Twenty-one open houses were conducted throughout the RTD District during September and October 2001 to gather public input on the plan concept. In addition, individual meetings were held with elected officials, Chambers of Commerce and civic groups in each corridor. In order to gain additional comments about the FasTracks Plan, a web site was established

and surveys were distributed to members of the general public. A number of changes were incorporated into the plan based on this input.

In December of 2002, the RTD Board adopted the FasTracks Plan as the vision for transit in the metro area. By the Spring of 2003, financial forecasts indicated that lagging sales tax revenues would not allow RTD to build the FasTracks Plan as originally proposed (i.e., full build-out of the rapid transit system within 10 years based on a 0.4 percent sales tax increase). A revised plan was proposed which scaled back the rapid transit build-out into two phases. Sixteen open houses were held in August and September 2003 to gather public input on the proposed changes to the plan. To date, over 347 public meetings and presentations have occurred.

In general, the public and elected officials preferred that RTD modify other plan features in order to build the entire rapid transit system. As a result, the FasTracks Plan was revised to include a build-out of the rapid transit system within a 12-year period with modifications in rail and bus operations in the opening years.

### **Capital Cost Estimates (Methodology, Unit Costs, Risk Assessment)**

The capital cost estimates for the FasTracks Plan were prepared in conjunction with the extensive study work that lead to the definition of the FasTracks Plan elements. They were also reviewed and revised using unit prices consistent with past and current construction costs in the metro area. In 2002, RTD hired an engineering consulting firm to independently review the FasTracks Plan rapid transit cost estimates. This consultant previously validated the CDOT/RTD T-REX project cost estimates. The result of their analysis validated the corridor-adjusted costs within 1.78 percent

of the estimate provided by RTD. Since that time, RTD has updated the estimates to reflect current conditions and costs in coordination with local governments and the operating freight railroads.

RTD has included in each corridor cost estimate funds to mitigate impacts to the local street networks. The construction of the FasTracks Plan will have an impact on the local roadway networks wherever a corridor is built. RTD recognizes that corridor-specific impacts will be identified as the preliminary and final design progresses. At this time, RTD has identified specific locations in each corridor that will need to be mitigated for bridges, grade crossings, and street restoration. In addition, RTD has allocated 7 to 8 percent of construction costs in each corridor to cover noise, urban design, and traffic control/signing and striping. These additive costs account for approximately 15 to 20 percent of the cost of the construction items.

A formal risk assessment was prepared for FasTracks that evaluated the potential financial risk associated with the proposed alignments and facilities and assigned a monetary value to the costs and the associated risk. The risk assessment developed contingencies for the FasTracks Plan in major categories (i.e., hazardous materials, schedule delays, quantity adjustments). The cost assigned to each category was established based on the cost estimate for the project and the estimated cost for each individual component that might be affected. A percentage risk adjustment was determined based on past history. Both a minimum risk dollar value and a high-risk dollar value were established. A probability was assigned to each item and a statistical analysis was performed to establish the dollar amount of probable risk. The result of that analysis has shown that the contingency amounts, provided in the plan

cost estimates, are within the risk tolerance for the plan.

RTD and CDOT staff also collaborated on an analysis that was released in June of 2003 that explored the construction coordination that would be needed between the FasTracks Plan and the state highway system. This analysis was used to develop a Master Intergovernmental Agreement (IGA) between RTD and CDOT that was signed by both agencies on April 12, 2004. The Master IGA establishes a coordinated process which facilitates the implementation of the FasTracks Plan and preserves the ability to pursue planned highway and transit improvements in corridors where both highway and transit improvements are likely to occur.

### **Rail and Bus Operating and Maintenance Cost Methodologies**

The LRT operating and maintenance costs were based on FY 2002 National Transit Database (NTDB) cost and statistical data provided by RTD. Unit costs were developed for specific costs categories within cost centers. The cost centers are based on NTDB categories within the following areas: vehicle operations and vehicle maintenance, non-vehicle maintenance and general administration. The model was validated to prior years. Specifically, prior year service statistics were entered into the cost model and cost results were deflated based on Consumer Price Index (CPI) inflation rates. The model was found to generate costs within a few percentage points of actual costs.

Bus operating and maintenance costs for FasTracks were developed using the RTD bus operating and maintenance cost model. The RTD bus cost model is an incremental cost model which uses unit costs based on actual RTD financial data and scheduled

units of service. The bus cost model develops unit costs based on the class of service operated, and allocates these costs to the service variable (or variables) most closely associated with the specific type of cost.

Incremental operating and maintenance costs for service to FasTracks bus routes were estimated at a systemwide average incremental cost of \$54.00 per hour. In addition to the incremental operating costs described above, the FasTracks Plan includes the opening of an additional bus maintenance facility. The bus cost model also was used to develop an annual operating cost for that facility, based on the 2002 operating costs for RTD's major facilities.

### Schedule and Implementation Plan and Building on Past Successes

RTD has been successful in its capital construction program. Starting with the CDOT, City and County of Denver and RTD partnership on the Downtown Express/Bus HOV lane project in 1994 and continuing with the three RTD operating light rail lines, the Central Corridor in 1994, the Southwest Corridor in 2000 and the Central Platte Valley in 2002, RTD has completed each corridor on time and within budget. The T-REX project, a combined RTD and CDOT construction project, also remains on schedule to open in 2006 and is within budget.

Similarly, for the FasTracks Plan, RTD is confident that its capital project cost estimates and its schedule and implementation plan are realistic. RTD has developed a schedule for implementation that places each of the corridors into revenue service within twelve years. In order to achieve this goal, the logical and sequential scheduling of all FasTracks elements is

incorporated into the schedule. The schedule was developed based on several factors that included:

- Activity in each of the corridors begins within one year after passage of FasTracks
- Prioritization of Facility/Corridor Interdependence
- Acquisition of Assets/Right-of-way
- Ability to Finance
- Sequencing of Activities
- Status of Corridor Project Development Activities

Sequencing of corridor construction will be established to coordinate with forecasted revenues so that RTD remains fiscally solvent throughout the implementation of the FasTracks Plan. There are other factors that could positively impact design and construction schedules for FasTracks. These include:

- Revenue receipts higher than forecasts.
- Additional federal funds (beyond current assumptions).
- Receipt of Senate Bill 1/revenues (state of Colorado).
- Lower corridor construction costs.
- Third party financial partnering to accelerate the construction schedule.

On the conservative side, RTD has estimated construction costs and timeframes on a design-bid-build basis but intends to evaluate every corridor and project for the possibility of design-build in order to implement the most cost effective and efficient means of construction. The management and implementation of the Plan will be the responsibility of RTD.

RTD's schedule was reviewed by a consulting firm with expertise in this area. The consultant prepared a schedule independent of the one prepared by RTD staff. The sequencing of the projects remained consistent with that of RTD. In the independent analysis, the consultants established their own logic to develop a schedule based on the experience of their personnel and from previous projects throughout the country. Durations varied slightly, but completion of each corridor was within the 12-year period established as the goal for the FasTracks Plan. This independent analysis concluded that the FasTracks Plan can be accomplished within the 12-year time period.

### Financial Plan

The FasTracks Plan is a comprehensive \$4.7 billion plan for addressing mobility needs in the Denver metro area over the next twelve years. In order to finance the plan, the District will seek voter approval for a 0.4 percent increase in the regional sales and use tax – this equates to 4 pennies on a \$10 purchase. This will bring the total tax in the District to 1 percent, comparable to other urban areas in the Western United States including Dallas, Houston, Los Angeles and San Francisco.

The Plan leverages local funding to support an estimated \$815 million in federal New Starts funding for various plan improvements. This is approximately 17 percent of the total cost of the plan and is reasonable compared to federal funds received over time by RTD for similar projects and at other transit properties throughout the United States. It also utilizes contributions from local jurisdictions benefiting from transit in an amount equal to 2.5% of project corridor costs or an estimated \$95 million. Local contributions could consist of right-of-way dedications,

permit fee waivers, cash contributions, corridor utility relocations as well as any other direct corridor contributions.

In addition, RTD has incorporated an estimated \$110 million in other federal grant revenues as part of the financing plan. An estimated \$50 million is expected from FTA in the form of bus discretionary funds for Denver Union Station or other bus projects such as vehicles and facilities. An estimated \$60 million is for federal flexible dollars through the DRCOG planning process between the years 2010 and 2015, consistent with the District's past receipts, allowing RTD to meet the implementation schedule requirements requested by local governments and adopted by the RTD Board of Directors.

**Table ES-1** summarizes the sources of funds expected to pay for the Plan's \$4.7 billion project expenditures:

**Table ES-1**  
**FasTracks Plan**  
**Estimated Sources of Capital Funds**  
(Year of Expenditure \$ in Thousands)

Source	Total	Percent
Sales Tax Bonds	\$2,365.9	50.16%
COPs	\$203.1	4.31%
TIFIA Loan	\$142.7	3.03%
"Pay as you go"	\$985.0	20.88%
Cash		
Federal Contribution	\$815.4	17.29%
- New Start		
Federal Contribution	\$110.0	2.33%
- Other		
Local Contribution	\$95.0	2.01%
<b>Total</b>	<b>4,717.1</b>	<b>100.00%</b>

In order to accomplish the Plan within the twelve-year schedule, a voter-approved Taxpayer Bill of Rights (TABOR) authorization of \$3.477 billion in principal and \$7.129 billion in total debt service must

be obtained. The maximum annual repayment is \$309.7 million.

### Conclusion

FasTracks is a comprehensive twelve-year plan designed to implement high quality transit service and facilities in the region. It responds to the growing transportation needs of the Denver metropolitan region by providing alternatives to traffic congestion. The Plan has been in development for over five years with major study activities taking place to define rapid transit corridor improvements, bus service and other elements. In conjunction with those study activities, RTD has solicited and incorporated local government and public input as part of each corridor recommendation. For the FasTracks Plan, alone, RTD has conducted 37 public meetings and 310 individual presentations on the plan. The final FasTracks Plan responds to local governments and the public to build a transit system that serves the needs of the community.

RTD has been successful in its capital construction program. RTD has completed each major corridor construction project (Downtown Express, Central Corridor, Southwest Corridor and Central Platte Valley Spur) on time and within budget. The T-REX project, a combined RTD and CDOT construction project, also remains on schedule and within budget. Similarly, for the FasTracks Plan, RTD is confident that its capital project cost estimates and its schedule and implementation plan are realistic.

The FasTracks financial plan will allow implementation over twelve years with voter approval for a 0.4 percent increase in the regional sales and use tax. This will bring the total tax in the District to 1 percent, comparable to other urban areas in the Western United States. Other sources of funding for the plan include federal and local

contributions that are reasonable and consistent with RTD's past funding history.

The FasTracks Plan will provide a number of direct benefits for citizens in the metro region. Travel times will be reduced for those using the transit alternatives outlined in the FasTracks Plan. Transit, particularly rail and bus guideway, is much more dependable and reliable in inclement weather and is not subject to highway incident related traffic. Riding a bus or train is much safer than auto travel.

Implementation of the FasTracks Plan will have a positive effect on the region wide environment. For every passenger mile traveled, public transportation is twice as fuel efficient as autos and trucks. The FasTracks Plan will lead to an annual reduction in metro area pollutants such as carbon monoxide, particulates and ozone.

There are a number of positive impacts to the regional economy with FasTracks. Sprawl and growth continue to be a concern to most metro area residents. FasTracks promotes smart growth and higher density development along transit corridors where it is consistent and appropriate and where it is supported by local cities and counties and its citizens. Opportunities for transit oriented development around rail and bus stations have been shown to increase property values.

FasTracks in the short term will provide increases in employment and disposable income through the creation of many direct construction jobs and other indirect jobs during the construction period. This is consistent with the T-REX project where 1,400 local jobs have been added to the economy. In the long term, the implementation of FasTracks will provide the needed infrastructure to sustain our economy

by creating a livable environment that will be attractive to business and development.

RTD has taken a number of actions to: 1) assure the success of the FasTracks plan; 2) assure accountability to the residents of the region; and 3) provide for continued coordination and communication with local governments, citizens, CDOT and DRCOG. Key examples of these actions follow:

#### RTD FasTracks Adoption and Election Resolution

On April 22, 2004, the RTD Board of Directors approved a resolution adopting the FasTracks plan and declaring the commitment to hold an election on the FasTracks plan in the November 2, 2004 general election if sufficient signatures are obtained on a petition, in accordance with state law. In their resolution, the RTD Board committed to ensuring "that the residents and taxpayers of the region are provided information about the progress of FasTracks implementation in the event an election is successful and have an ongoing opportunity to review progress and provide input in the numerous decisions that will be required for construction of each corridor." To accomplish this, the resolution directs the creation of "a citizen's advisory committee to monitor and provide input on the improvements for each corridor contained in the Plan."

#### DRCOG Senate Bill 208

On April 21, 2004, the DRCOG Board of Directors approved the FasTracks plan and the individual corridors, the technologies, and the method of financing, pursuant to C.R.S. 32-9-107.7 (the "Senate Bill 208" process), mandated by the state legislature. In support of this action, DRCOG performed a comprehensive technical review of the individual FasTracks corridors and the FasTracks financial plan.

#### Master Intergovernmental Agreement (IGA) between CDOT and RTD

On April 12, 2004, CDOT and RTD executed the Master IGA that establishes a coordinated process which facilitates the implementation of the FasTracks Plan and preserves the ability to pursue planned highway and transit improvements in corridors where both highway and transit improvements are likely to occur.

#### RTD Hold Harmless Resolution

On February 17, 2004, the RTD Board of Directors approved a resolution entitled "Regarding Board Commitments for FasTracks (Hold Harmless)". This action confirmed RTD's commitment to build each corridor's specific list of corridor improvements consistent with and as described in the FasTracks Plan and within the fiscal constraints and schedule of the plan subject to the completion of the environmental process and conformity with any federal Record of Decision for a corridor. It further formalized the commitment to analyze the Plan annually to determine current revenue projections from both local and federal sources. The resolution states, "If RTD revenues are better or worse than expected then all the corridors will be adjusted accordingly."

Additionally, the Hold Harmless resolution commits "that prior to construction, a corridor cost risk assessment and value engineering (will) be conducted to minimize the potential for cost overruns and schedule delays. Based on the results of both, project and financial analyses, modifications to individual corridor project elements, service plans, and schedules may be necessary for all FasTracks corridors. This may be necessary so as to not impact the scheduled construction and operation of the remaining FasTracks corridors, thereby "holding harmless" those corridors. This information shall be reported annually to the general

public." Each annual review will be conducted by RTD, through the DRCOG process, and will be reported to local governments and the public.

Furthermore, the sixth point in the approved resolution reads as follows: "Construction of FasTracks committed improvements within a corridor will not start until there is a firm commitment of all required funding sources, be they private, local-match or federal monies and intergovernmental agreements are in place with local governments concerning permits, design and plan review proves for timely implementation."

## 1 Program Description

FasTracks is an integrated program of transit improvements which includes:

- Construction of rapid transit in six new corridors, and enhancements and extensions to existing rapid transit lines in three corridors. The rapid transit element includes light rail, commuter rail and bus rapid transit.
- Enhancements to bus service, including an extensive feeder bus to rail and bus rapid transit stations and new suburb-to-suburb bus service along major corridors.
- A system of “FastConnects” timed transfer points to enhance passenger convenience and minimize wait times for transfers between modes.



- Thirty-one new park-n-Rides and expansions to nine park-n-Rides – more than an 80% increase over existing and new T-REX spaces.
- A major downtown multimodal Center – Denver Union Station – which will provide access to nearly every rapid transit line as well as regional buses, local circulators and inter-city rail and bus service.

- Transit facilities and amenities designed to improve passenger, safety, convenience and use of the transit system.

**The FasTracks Program includes 119 miles of rail and 18 miles of bus rapid transit.**

The major components of the FasTracks Plan are described in greater detail in the following sections.

### 1.1 Rapid Transit Corridors

The FasTracks Plan includes 119 miles of rail rapid transit in nine corridors and contributes to the construction of 18 miles of bus rapid transit. An overview of the rapid transit elements of the FasTracks Plan is shown in **Figure 1, FasTracks Rapid Transit Corridors**. The recommendations for transit technology, alignment and operating plans in each of the corridors were developed through a combination of Major Investment Studies, (MISs), Environmental Impact Statements (EISs) and Corridor Studies conducted since 1997.

A brief history of the process and studies is summarized for each of the corridors, followed by a map depicting the major corridor elements that will be funded as part of the FasTracks Plan.



# Rapid Transit Corridors

## FASTTRACKS RTD

### Overview - Rapid Transit

137 Additional miles of rapid transit  
119 miles Rail  
18 miles Bus Rapid Transit

57 Additional rapid transit stations

**\$4.7B** Capital cost (inflated dollars)

21,213 Additional parking spaces at transit park-n-Rides  
Enhanced bus service and FastConnects throughout the region

### Corridors

#### Central & CPV Corridor Enhancements

Vehicle Type: Light Rail  
Length (miles): 7.1 (existing)/0.8 (new)  
Stations: 18 (existing)/2 (new)  
Parking: 1,685 (existing)  
400 (new)  
Capital Cost: \$118.4M\*  
2025 Ridership: 31,800 - 37,200

#### East Corridor

Vehicle Type: Commuter Rail/DMU  
Length (miles): 23.6  
Stations: 5  
Parking: 2,848 (existing)  
681 (new)  
Capital Cost: \$702.1M\*  
2025 Ridership: 30,400 - 35,600

#### US 36 Corridor/Longmont Extension\*\*

Vehicle Types: Commuter Rail/DMU, BRT  
Length (miles): 38.1 (rail)/18 (BRT)  
Stations: 7 (rail)/6 (BRT)  
Parking: 3,975 (existing)  
4,393 (new)  
Capital Cost: \$791.4M\*  
2025 Ridership: 8,600 - 10,100 (rail)  
16,900 (BRT)

#### West Corridor

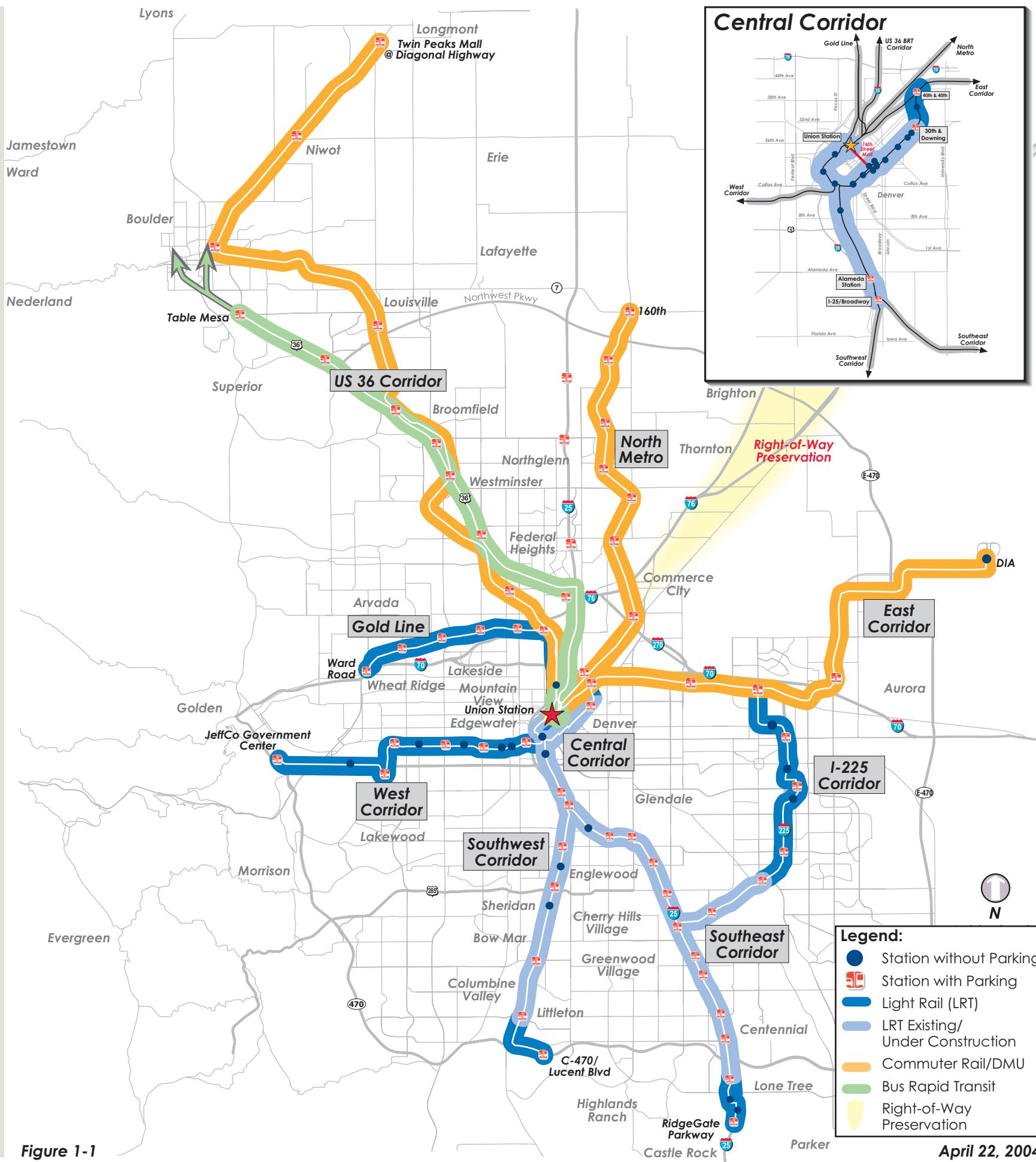
Vehicle Type: Light Rail  
Length (miles): 12.1  
Stations: 11  
Parking: 646 (existing)  
5,054 (new)  
Capital Cost: \$508.2M\*  
2025 Ridership: 31,200 - 36,500

#### Southeast Corridor Enhancements

Vehicle Type: Light Rail  
Length (miles): 19.1 (under construction)/2.3 (new)  
Stations: 13 (under construction)/3 (new)  
Parking: 2,079 (existing)  
4,883 (under construction)  
2,520 (new)  
Capital Cost: \$183M\*  
2025 Ridership: 51,100 - 59,800

\* inflated costs

\*\* FasTracks investments include construction of BRT slip ramps, park-n-Rides and stations, and a contribution toward HOV lanes. HOV lane construction is the responsibility of CDOT.



## Central Corridor and Central Platte Valley Enhancements

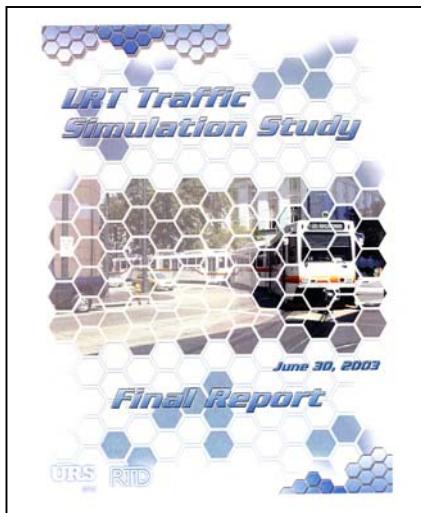
The Central Corridor light rail line opened in October 1994 and was the first segment of light rail in Denver. This light rail line is 5.3 miles in length, and extends from I-25 and Broadway to the Denver downtown area, and along Welton Street through Five Points to 30<sup>th</sup> and Downing. The Central Corridor has fourteen stations and three park-n-Rides.

The Central Corridor was connected to the Southwest Corridor light rail line in July 2000, and to the Central Platte Valley (CPV) light rail spur in April 2002.

The CPV spur is a 1.8-mile light rail line that serves four stations and numerous venues including the Auraria Campus, Invesco Field at Mile High, the Pepsi Center, Six Flags/Elitch Gardens and Union Station.

**The Central Corridor and Central Platte Valley LRT lines will be enhanced to serve as the spine of the regional rail network.**

To handle the forecasted ridership for build out of the overall rapid transit system, the FasTracks Plan will modify the existing light rail stations in the Central Corridor and CPV to accommodate four-car trains and extend the light rail north from the 30<sup>th</sup>/Downing station to the 40<sup>th</sup>/40<sup>th</sup> station where it connects to the East Corridor. All improvements will be subject to the results of the final environmental process.

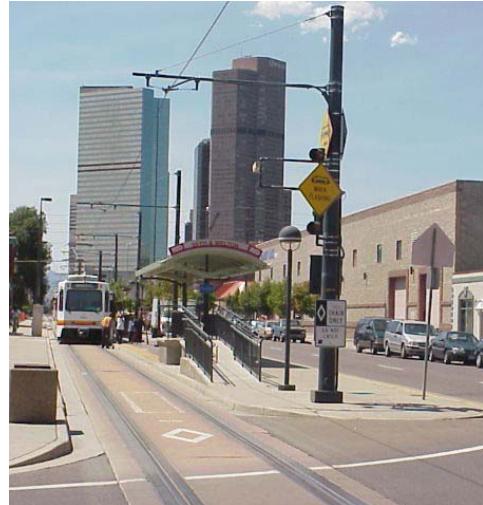


A number of rail infrastructure improvements will be made along the Central Corridor to improve service efficiency. Improvements include a partial grade separation at 13<sup>th</sup> Avenue and the construction of two additional tracks between Broadway and Alameda and between 10<sup>th</sup> Avenue and Osage and the CPV Junction.

FasTracks will also fund a new circulator system to serve commuters arriving at Denver Union Station and needing to travel to the Civic Center area of downtown Denver and other downtown destinations. The specific route and characteristics of the downtown circulator are currently being defined as part of the Downtown Multimodal Access Plan (DMAP), currently underway. Once the study is complete, RTD will incorporate the final alternative(s) into the FasTracks Plan. The performance standards and characteristics that have been defined for the circulator include:



- Service frequency that minimizes dwell times
- Quick service from one end of Downtown to the other, with travel times that are comparable to the 16th Street Mall Shuttle (Dependent on RTD's ability to receive agreement from the City and County of Denver for dedicated lanes on the Circulator's alignment).
- Uniform, bi-directional service throughout Downtown that is visible and user-friendly
- Free fare service for RTD patrons
- Service to office and residential areas
- Technology that is reliable, provides adequate capacity, and is environmentally friendly.
- Easy and effective transfer at Denver Union Station.
- Service that complements and enhances the 16<sup>th</sup> Street Mall Shuttle by providing sufficient capacity and connecting additional areas of transit demand.



In 2003, RTD finished a Light Rail (LRT) and Traffic Simulation Study to increase LRT operating capacity through Downtown Denver. The consultant study concluded that it would be reasonable to operate 16 trains per hour in the downtown area. This study also indicated that with signal timing or physical modifications at two locations RTD could operate four-car trains through downtown Denver. FasTracks includes this provision to increase operating capacity.



# Central and CPV Corridor Enhancements

## FASTTRACKS RTD

### Project Description

The Central Corridor light rail line was opened in 1994 as a 5.3-mile line between I-25/Broadway and 30<sup>th</sup>/Downing in central Denver. The line includes fourteen stations with over 1,600 parking spaces. The 1.8-mile Central Platte Valley (CPV) spur was added in April 2002 to provide access to attractions in the Central Platte Valley including Invesco Field at Mile High, the Pepsi Center, and Denver Union Station in Lower Downtown.

As a part of FasTracks, enhancements to the Central/CPV corridor include improvements to existing stations so that they can accommodate four-car trains, partial grade separation of 13th Avenue, construction of two additional tracks between Broadway and Alameda and between 10th/Osage and the CPV junction to increase operating capacity. Enhancements also include extension of the existing light rail line north from the 30<sup>th</sup>/Downing station to the 40<sup>th</sup>/40<sup>th</sup> station on the East Corridor, and development of a Downtown Circulator system to complement and expand the service area of the 16<sup>th</sup> Street Mall shuttle and help distribute passengers arriving at Denver Union Station from multiple rapid transit corridors.

2025	
Service Frequency (peak / offpeak)	2-3 min/3-4 min (rail)
Capital Costs	\$ 118.4M*
Daily Transit Ridership	31,800 - 37,200

\* inflated dollars, includes vehicles

### Project Benefits

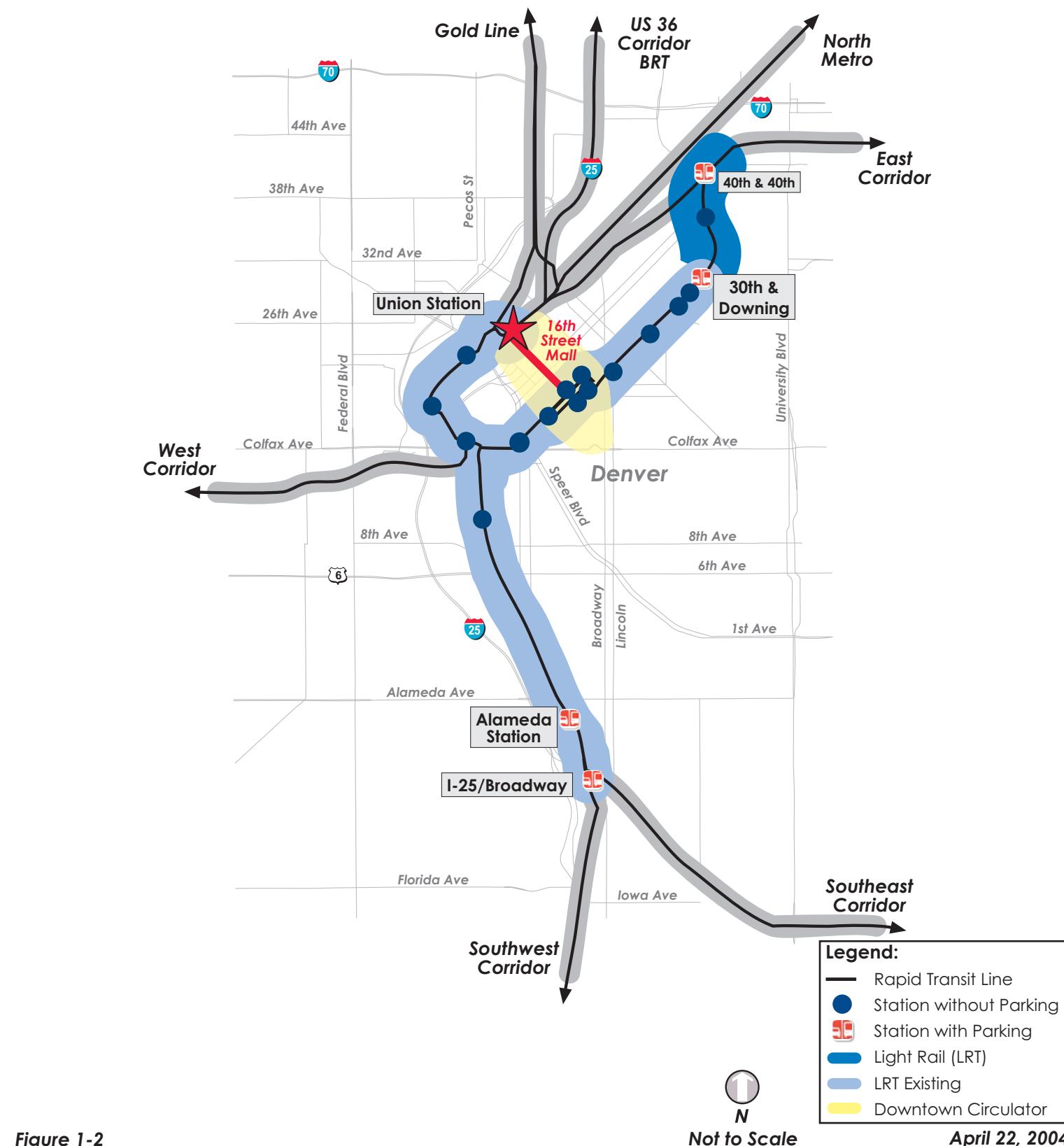
- Two new stations
- Fourteen improved/expanded stations to be able to accommodate four-car light rail trains (Two existing stations already accommodate four-car trains.)
- Creation of a new Downtown Circulator to complement/expand the service area for the 16<sup>th</sup> Street Mall Shuttle
- Economic Development Opportunities:
  - 40<sup>th</sup>/40<sup>th</sup> Station Area – the City and County of Denver has developed the River North Plan for this area that includes a dense mix of commercial and residential uses in and around the proposed station.
  - I-25/Broadway – a dense mixed-use urban village is planned on the old Gates Rubber property (Gates/Cherokee). Over 70 acres are slated for redevelopment with nearly 5,500 residential units, 2.8 million square feet of office space, 360,000 square feet of retail space, and 175,000 square feet of hotel space.

### Central Corridor Parking

Station	Existing Spaces	New Spaces	Total Spaces
I-25/Broadway	1,140 *	0	1,140
Alameda	518	0	518
30 <sup>th</sup> /Downing	27	0	27
40 <sup>th</sup> /40 <sup>th</sup> **	0	400	400
<b>Total Spaces</b>	<b>1,685</b>	<b>400</b>	<b>2,085</b>

\* Total number of spaces following completion of Broadway bridge reconstruction.

\*\* 40th/40th serves both East and Central Corridor.



## East Corridor

The East Corridor is 23.6 miles in length, and connects downtown Denver and the eastern portion of the metro area to Denver International Airport (DIA) with five stations. The East Corridor provides a number of important transportation functions including interstate/intrastate travel along I-70; regional access from downtown Denver and the eastern metro area to DIA, linkage as an "inner beltway" between I-225 and I-270, and access to adjacent employment areas and intermodal freight facilities.

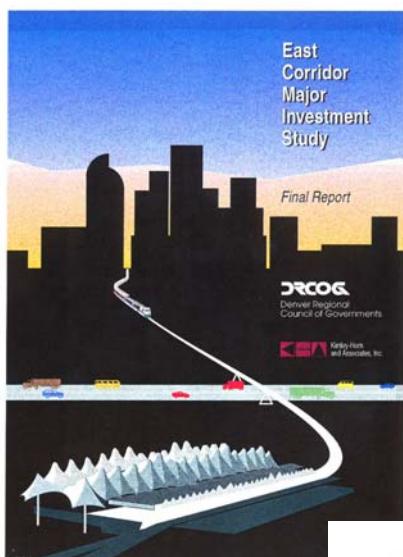
Development trends indicate that the corridor will be a major regional destination for future employment.

Several areas in the vicinity of this corridor have a relatively high proportion of transit-dependent residents who would benefit from improved access to expanding employment

**The East Corridor will connect DIA, Stapleton and Downtown Denver.**

opportunities. Additionally, this corridor will serve the substantial residential and business growth in the former Stapleton Airport area and the Gateway Area at 40<sup>th</sup> Avenue and Airport Boulevard. Congestion along I-70 is forecasted to be severe by the year 2025, resulting in slow travel speeds, increased number of accidents, and incident-related congestion.

The recommendations for the East Corridor were developed through an MIS conducted by DRCOG in 1997. The alignment of the East Corridor begins northeast of Denver Union Station (at roughly 20<sup>th</sup> and Delgany) and runs



northeast along the railroad right-of-way to Blake and East 40<sup>th</sup> Avenue. From there, the alignment follows an easterly course along the railroad right-of-way that parallels Smith Road to Airport Boulevard, where the alignment curves north. The alignment then roughly follows Peña Boulevard north and east to the airport terminal.

The MIS recommended a single-track commuter rail line from Denver Union Station to Denver International Airport, including five stations and reconstruction of I-70 and widening of I-70 between I-270 and Peña Boulevard. In 2003, RTD and CDOT initiated an Environmental Impact Statement for the East Corridor, which is currently on-going.



The FasTracks Plan would fund the transit recommendations of the MIS. FasTracks also includes funds for an additional station at Peoria and Smith Road to connect to the I-225 light rail line, and double-tracking the commuter rail line to allow for more frequent (15 minute) service. The transportation improvements in this corridor are subject to the results of the Environmental Impact Statement in progress.

# East Corridor

## FASTTRACKS RTD

### Project Description

The East Corridor is a 23.6-mile commuter rail transit project that extends from Denver Union Station in Downtown Denver to Denver International Airport (DIA). The alignment generally follows the existing railroad tracks to east of Chambers Road and then turns north on the east side of Pena Boulevard and terminates at the south end of the DIA terminal.

The East Corridor connects Downtown Denver and DIA directly, providing a convenient and easy connection for visitors and residents. The East Corridor also provides a linkage to northeast Denver and the old Stapleton Airport, the largest urban infill development project in the United States.

2025	
<b>Service Frequency (peak / offpeak)</b>	15 min/15 min (rail)
<b>Capital Costs</b>	\$ 702.1M*
<b>Daily Transit Ridership</b>	30,400 - 35,600

\* inflated dollars, includes vehicles

### Project Benefits

- Five new commuter rail stations
- Peak hour travel time savings (transit vs auto) in 2025
  - Downtown to DIA = 15 minutes
- Percentage of people using transit in the peak travel period, current/with FasTracks = 10%/22%
- Economic Development Opportunities:
  - 40<sup>th</sup>/40<sup>th</sup> Station Area – the City and County of Denver has developed the River North Plan for this area that includes a dense mix of commercial and residential uses in and around the proposed station.
  - Stapleton – at over 4,700 acres, this is one of the country's largest infill redevelopment sites and includes designated areas for transit oriented development along the Smith Road Corridor adjacent to the Union Pacific right-of-way. Over 13 million square feet of office and retail space, and 12,000 homes will be built within the next 30 years.

### East Corridor Parking

Station	Existing Spaces	New Spaces	Total Spaces
40 <sup>th</sup> /40 <sup>th</sup> *	0	400	400
Stapleton**	1,769	0	1,500
Peoria/Smith Road***	0	550	550
Airport Blvd/40th Ave	1,079	0	1,079
<b>Total Spaces</b>	<b>2,848</b>	<b>950</b>	<b>3,529</b>

\* 40<sup>th</sup>/40<sup>th</sup> Station serves both the East Corridor and the Central Corridor.

\*\* Existing parking facility at Stapleton will be relocated to Smith Road resulting in a net loss of 269 spaces.

\*\*\* Peoria/Smith Road Station serves both the East Corridor and I-225 Corridor.

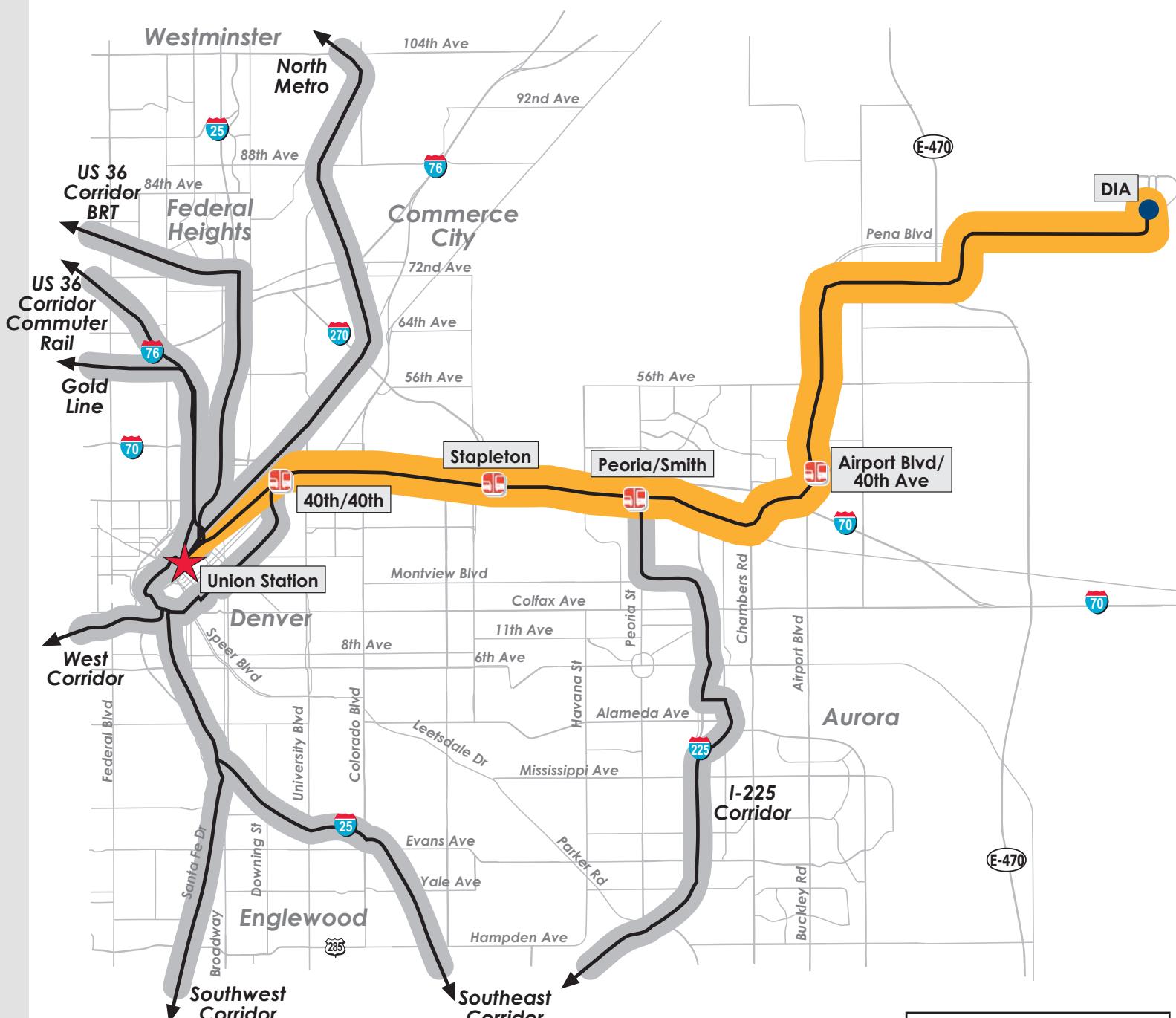
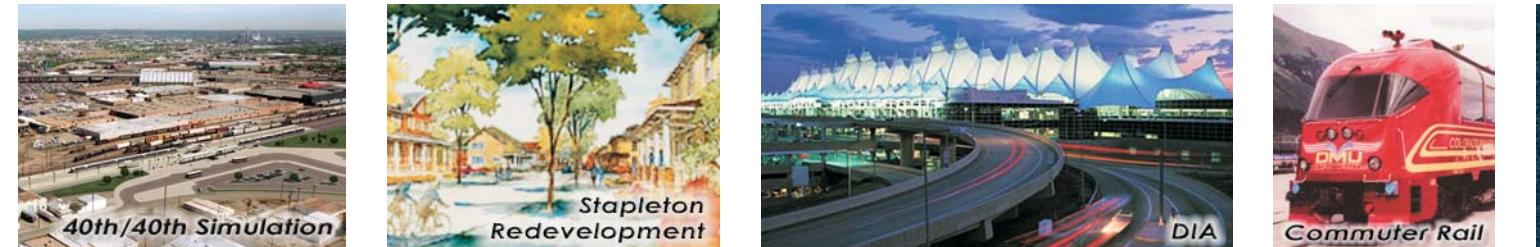


Figure 1-3

Not to Scale

April 22, 2004

## Gold Line

The Gold Line is 11.2 miles in length and connects downtown Denver with western Arvada. The Gold Line would provide transit service to northwest Denver, Wheat Ridge and Arvada with seven light rail stations. Major destinations include Olde Town Arvada and Arvada Ridge, the site of a major planned redevelopment to include residential and commercial units. The Gold Line parallels I-70, which also serves as the major gateway for both regional and interstate motorists traveling to the mountains. The corridor population is anticipated to increase by over 30 percent by the year 2025. Without transportation improvements in the corridor, projections for I-70 indicate eleven lane miles of severe congestion with duration greater than three hours daily by the year 2025.

The recommendations for light rail transit and minor highway improvements for the Gold Line were developed through an MIS conducted by RTD between 1998 and 2000. The light rail transit improvements were recommended on an alignment that begins at the existing railroad crossing under 20<sup>th</sup> Street, roughly at Delgany. The alignment then runs northeast of the Consolidated Mainline railroad tracks and the South Platte River. The alignment parallels the railroad tracks, following a northerly path under I-25 and along the east side of Inca Street approximately to 56<sup>th</sup> Avenue extended. The alignment then follows

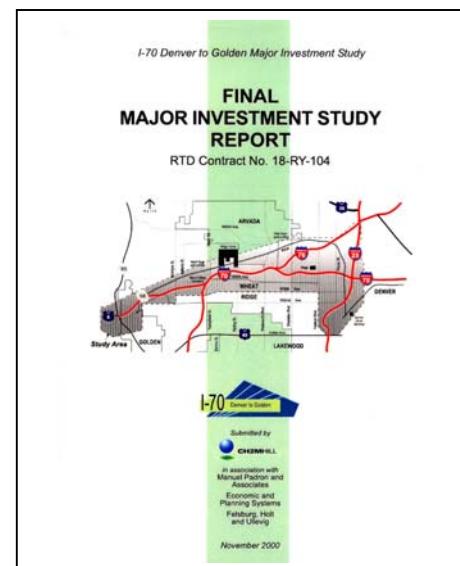
**The Gold Line will serve commuters on the west side as well as provide a rail connection to Olde Town Arvada.**

a sweeping curve northwest to the existing railroad crossing of Pecos. West from Pecos, the Gold Line follows the railroad tracks roughly to Sheridan and continues to follow the railroad right-of-way westerly to Tabor Street. The alignment then turns south along Tabor from Ridge Road to the 48<sup>th</sup> Avenue Frontage Road,

west along the frontage road to Ward Road, and then south along Ward Road to the park-n-Ride. The FasTracks Plan would fund the transit recommendations from the MIS subject to the results of the final environmental process.



Olde Town Arvada



# Gold Line

## FASTTRACKS RTD

### Project Description

The Gold Line is an 11.2-mile light rail transit project that extends from Denver Union Station in downtown Denver to Wheat Ridge. The alignment generally follows the railroad right-of-way north from Denver Union Station to Pecos Boulevard and continues west to the intersection of I-70 and Ward Road.

The Gold Line provides a new transit option between Downtown and the western metro area and serves as an alternative to I-70 which is expected to experience severe congestion in the future during the peak travel periods.

2025	
<b>Service Frequency (peak / offpeak)</b>	7.5 min/15 min (rail)
<b>Capital Costs</b>	\$ 436.5M*
<b>Daily Transit Ridership</b>	16,300 - 19,100

\* inflated dollars, includes vehicles

### Project Benefits

- Seven new light rail stations
- Peak hour travel time savings (transit vs auto) in 2025
  - Ward Road to Downtown Denver = 19 minutes
  - Ward Road to Denver Tech Center = 31 minutes
- Percentage of people using transit in the peak travel period, current/with FasTracks = 6%/25%
- Economic Development Opportunities:
  - Olde Town Arvada – a new civic complex is planned which includes a library and other new civic buildings to complement the historical Olde Town retail area and Water Tower Village development (currently under construction).
  - Arvada Ridge Station – the Arvada Ridge site contains over 70 acres planned for over 590 residential units with supporting retail and office space.

### Gold Line Parking

Station	Existing Spaces	New Spaces	Total Spaces
Pecos	0	400	400
Federal	0	600	600
Sheridan	0	400	400
Olde Town	200	400	600
Arvada Ridge	0	250	250
Ward Road	511	0	511
<b>Total Spaces</b>	<b>711</b>	<b>2,050</b>	<b>2,761</b>

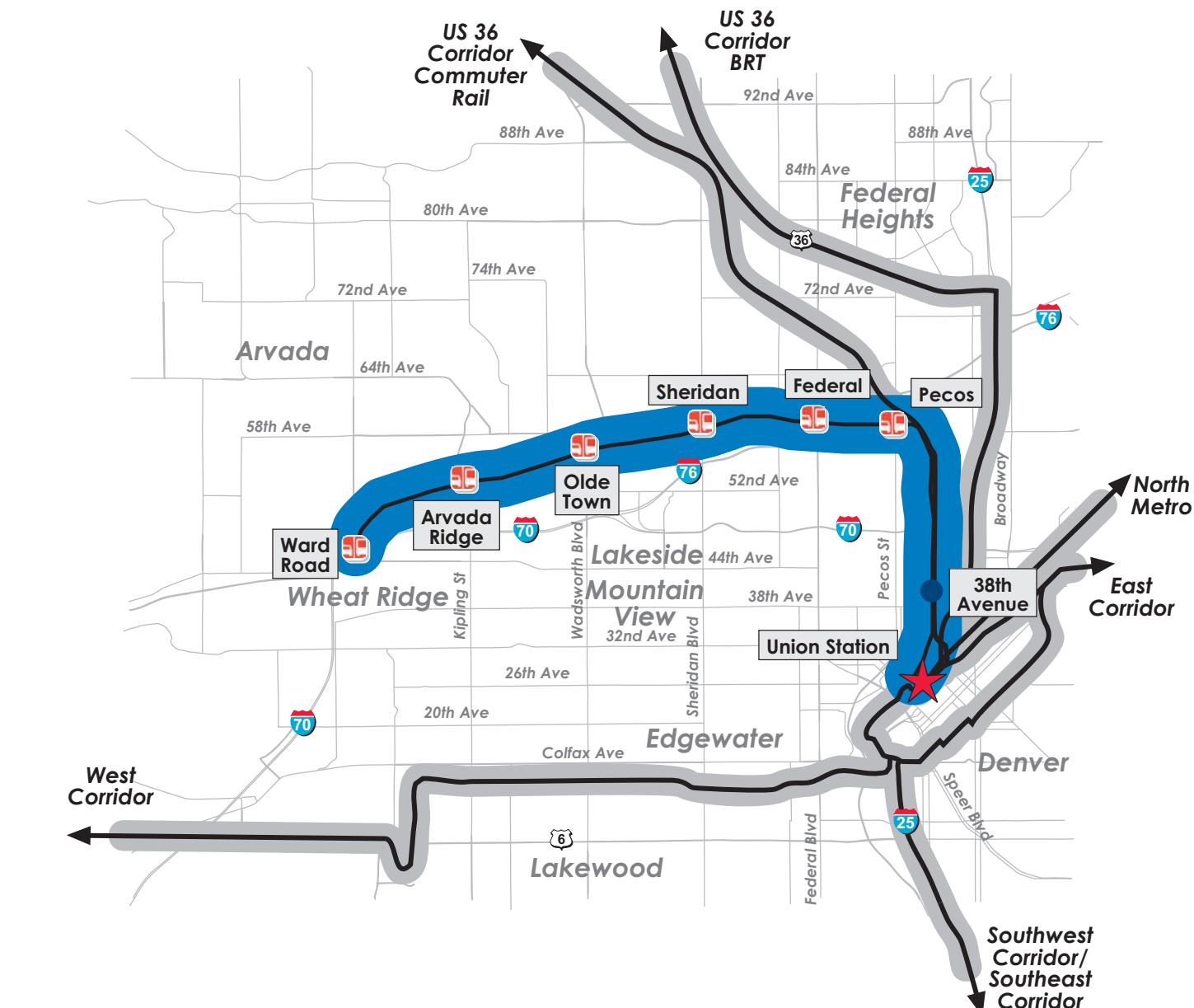
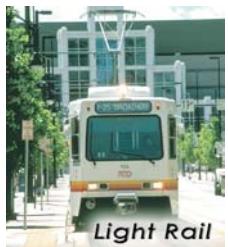


Figure 1-4

**Legend:**

- Rapid Transit Line
- Station without Parking
- Station with Parking
- Light Rail (LRT)

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Not to Scale

April 22, 2004

## I-225 Corridor

The I-225 Corridor is 10.5 miles long, and connects the Southeast Corridor light rail line at I-225 and Parker Road to the East Corridor rail line at Peoria and Smith Roads. The corridor completes the rapid transit system linkages in the eastern metro area and improves suburb-to-suburb travel. The I-225 Corridor also provides light rail access to the Aurora City Center, the Arapahoe County Municipal Center, the Aurora Mall and the future University of Colorado Health

Sciences Center at Fitzsimons with seven light rail stations.

Growth along this corridor has been greater and occurred much faster than anticipated, and the Interim DRCOG 2025 Regional Transportation Plan indicates that I-225 is projected to experience "pervasive and severe" congestion in the future. The corridor does not have the sufficient capacity or facilities to handle increased demand from employment growth within the corridor or the increased demand from regional growth.

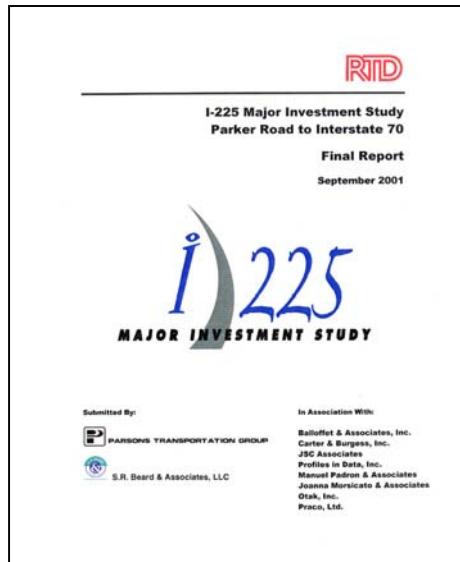
The recommendations for the I-225 Corridor were developed through an MIS conducted by RTD between 1998 and 2001. The MIS recommended light rail transit from I-225 and Parker Road to Peoria and Smith Roads and the widening of I-225 to eight lanes. The light rail alignment of the I-225 Corridor generally begins at the Nine Mile park-n-Ride and traverses northerly within the median of I-225 and then turns eastward into the Aurora City Center. The alignment traverses northeast through the City Center, crosses Alameda Parkway and runs north

along Sable Boulevard to Ellsworth Avenue where it turns west toward I-225. The alignment then runs northward along I-225

**I-225 LRT will serve Aurora in addition to providing a key regional rail linkage between the East Corridor and Southeast Corridor.**

to Colfax Avenue where it turns west, crossing over I-225, and turns north along the proposed Sand Creek Parkway. At Montview Boulevard, the alignment turns west into Fitzsimons. On the west side of Fitzsimons, it turns north at Peoria to terminate at Smith Road.

The FasTracks Plan would fund the transit recommendations from the MIS subject to the results of the final environmental process and incorporates the latest planning efforts by the City of Aurora to serve the Fitzsimons redevelopment area.



*Model of Fitzsimons  
Redevelopment*

# I-225 Corridor

## FASTTRACKS RTD

### Project Description

The I-225 Corridor project is a 10.5-mile light rail line that connects the Southeast Corridor light rail station at Parker Road and I-225 and the East Corridor at Smith Road and Peoria. The alignment follows I-225 in the median between the Parker Road and the Aurora City Center area where it leaves the median and travels through the Aurora City Center area. The alignment returns to the median of I-225 and continues to Colfax Avenue where it turns west to serve the Fitzsimons redevelopment area. This light rail line continues north along Peoria Street to Smith Road, where a cross-platform transfer to the East Corridor rail line to the Denver International Airport (DIA) is provided.

The I-225 Corridor will serve Aurora in addition to providing a key regional rail linkage between the East and Southeast Corridors. It will also provide a rapid transit opportunity for suburb-to-suburb travel in the eastern metro area.

2025	
<b>Service Frequency (peak / offpeak)</b>	7.5 min/10 min (rail)
<b>Capital Costs</b>	\$ 442.3M*
<b>Daily Transit Ridership</b>	15,200 - 17,800

\* inflated dollars, includes vehicles

### Project Benefits

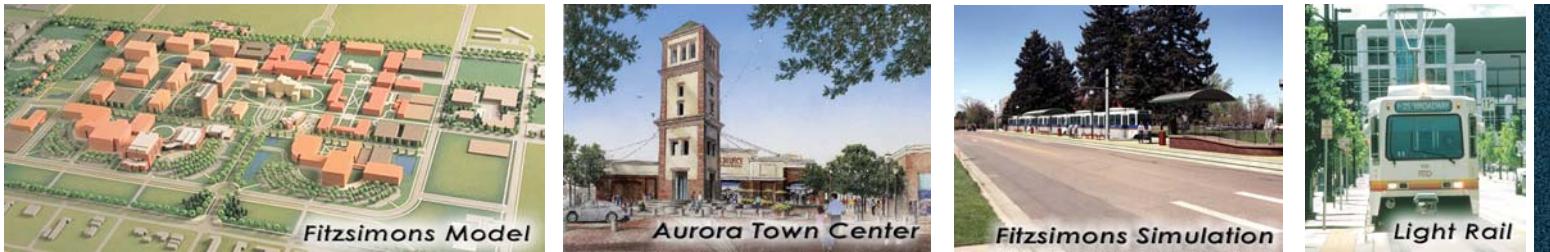
- Seven new light rail stations
- Peak hour travel time savings (transit vs auto) in 2025
  - Aurora City Center to Downtown Denver = 9 minutes
  - Aurora City Center to Denver Tech Center = 31 minutes
- Percentage of people using transit in the peak travel period, current/with FasTracks = 9%/19%
- Economic Development Opportunities:
  - Aurora City Center Area – this area includes the new Aurora Municipal Center and the planned redevelopment of the Aurora Mall and surrounding properties.
  - Fitzsimons Medical Center – the Fitzsimons Medical Center is undergoing a \$4.3 billion renovation into a world-class medical research and care facility, which at build-out will employ more than 32,000 people.

### I-225 Corridor Parking

Station	Existing Spaces	New Spaces	Total Spaces
Nine Mile*	1,225	0	1,225
Iliff	0	450	450
Aurora City Center	0	200	200
Fitzsimons Commons	0	600	600
Peoria/Smith**	0	550	550
<b>Total Spaces</b>	<b>1,225</b>	<b>1,800</b>	<b>3,025</b>

\* Nine Mile Station serves both the Southeast Corridor and the I-225 Corridor.

\*\* Peoria/Smith Road Station serves both the East Corridor and I-225 Corridor.



**Legend:**

- Rapid Transit Line
- Station without Parking
- Station with Parking
- Light Rail (LRT)

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Not to Scale

## North Metro Corridor

The North Metro Corridor includes the area bounded by Pecos Street on the west, I-76

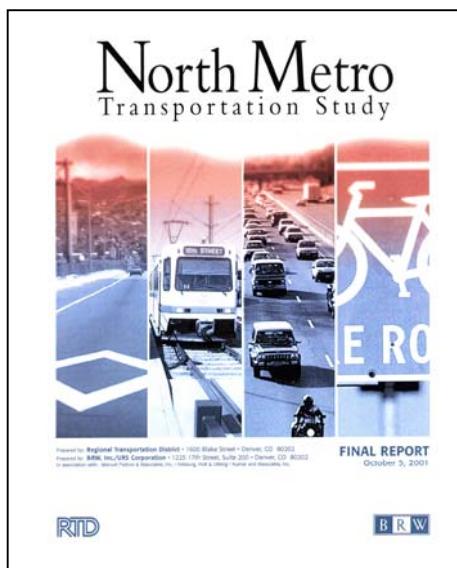
**The North Metro Corridor will bring rail to the northern metropolitan area as well as preserve additional opportunities to serve future needs.**

on the east, 168<sup>th</sup> Avenue on the north, and downtown Denver on the south. The North Metro Corridor commuter rail line is 18 miles long and connects Thornton, Northglenn and Commerce City to the Denver metro area with eight stations and provides connections to DIA through a rail transfer at Denver Union Station. The City of Thornton is planning transit oriented development (TOD) at many of the proposed rail stations.

The North Metro area is forecast to be one of the fastest growing areas of the region over the next 20 years. Growth rates for both population and employment are forecast to be double the regional average. The I-25 and I-76 corridors are forecast to intensify as employment corridors, with the areas between the two interstate facilities filling in with residential development. Congestion along north I-25 is already severe, with forecasts indicating increasing severity and duration of congestion.

The recommendations for the North Metro Corridor were developed through an MIS conducted by RTD between 1998 and 2001. The MIS recommended an integrated plan of transit, roadway, bus/high occupancy vehicle (HOV) lane and corridor preservation to improve mobility, reduce congestion and improve access to all parts of the study area.

The MIS recommended light rail or diesel multiple unit (self-propelled commuter rail) transit along the railroad right-of-way from Denver Union Station to 124<sup>th</sup> Avenue, preservation of right-of-way for future rapid transit or rail service to Brighton, additional park-n-Rides along the rail line and along I-25, extension of Bus/HOV lanes on I-25 from US 36 to SH 7, addition of Bus/HOV lanes on I-76 and SH 224, widening of I-25 and I-76, and implementation of grade separations on US 85.



The FasTracks Plan would fund a double-track commuter rail line along the railroad right-of-way to 124<sup>th</sup> Avenue, new and improved park-n-Rides along the commuter rail line and along I-25, eight stations and contribution towards right-of-way preservation for transit service to Brighton. Additionally, FasTracks would extend the rail line on a single track to SH 7 (160<sup>th</sup> Avenue) to be consistent with local planning efforts by the City of Thornton. All improvements to be implemented are subject to the results of the final environmental process.

# North Metro

## FASTTRACKS RTD

### Project Description

The North Metro Corridor is an 18-mile commuter rail line that extends from Denver Union Station in Downtown Denver north to 160<sup>th</sup> Avenue (SH7) north of Thornton. The commuter rail line generally follows the railroad right-of-way to the east of I-25. FasTracks also includes right-of-way preservation for future transit and the addition of new park-n-Rides at 136<sup>th</sup> and I-25, and at Bromley Lane on I-76. The expanded park-n-Rides complement any future extension of the I-25 Bus/HOV lanes and proposed Bus/HOV lanes along I-76. Both of these bus/HOV projects are assumed to be the responsibility of the Colorado Department of Transportation (CDOT).

The North Metro Corridor greatly expands transit access and service to the north metro area between I-25 and I-76. This area is one of the fastest growing areas in the metro area and is expected to more than double in population and employment by 2025.

2025	
Service Frequency (peak / offpeak)	15 min/30 min (rail)
Capital Costs	\$ 428.1M*
Daily Transit Ridership	10,200 - 11,900

\* inflated dollars, includes vehicles

### Project Benefits

- Eight rail stations
- Peak hour travel time savings (transit vs auto) in 2025
  - 160<sup>th</sup> Avenue to Downtown Denver = 55 minutes
  - 160<sup>th</sup> Avenue to Denver Tech Center = 68 minutes
- Percentage of people using transit in the peak travel period, current/with FasTracks = 12%/19%
- Economic Development Opportunities:
  - 88<sup>th</sup> Avenue Station – A TOD plan was approved by the City of Thornton for a 50-acre site located east of the proposed station. The plan calls for high-density residential and commercial development adjacent to the station.
  - 124<sup>th</sup> Avenue Station – the City of Thornton adopted the Eastlake Subarea Plan in May 2003 to allow for compact, mixed-use development near the proposed station. The City of Thornton also rezoned the property adjacent to the station to transit-oriented zoning in June 2003.

### North Metro Parking

Rail Station	Existing Spaces	New Spaces	Total Spaces	Bus/HOV p-n-R	Existing/Planned Spaces	New Spaces	Total Spaces
160 <sup>th</sup>	0	700	700				
144 <sup>th</sup>	0	600	600				
124 <sup>th</sup>	0	800	800				
112 <sup>th</sup>	0	250	250				
100 <sup>th</sup>	0	100	100				
88 <sup>th</sup>	0	150	150				
Commerce City*	83	17	100				
Globeville/Swansea	0	400	400				
<b>Total Spaces</b>	<b>83</b>	<b>3,017</b>	<b>3,100</b>	<b>Total Spaces</b>	<b>2,909</b>	<b>750</b>	<b>3,659</b>

\* Existing Commerce City park-n-Ride will be relocated.

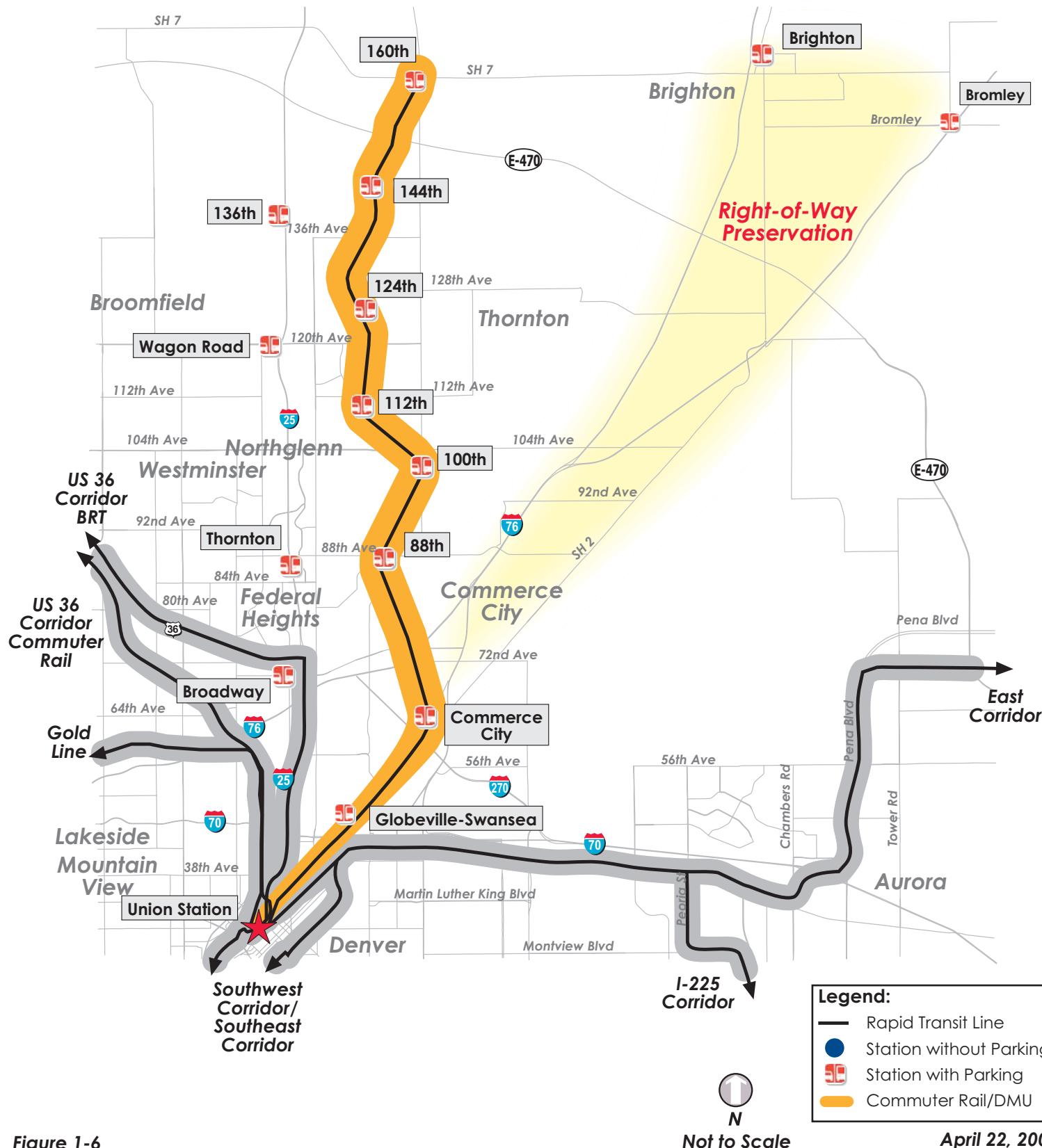
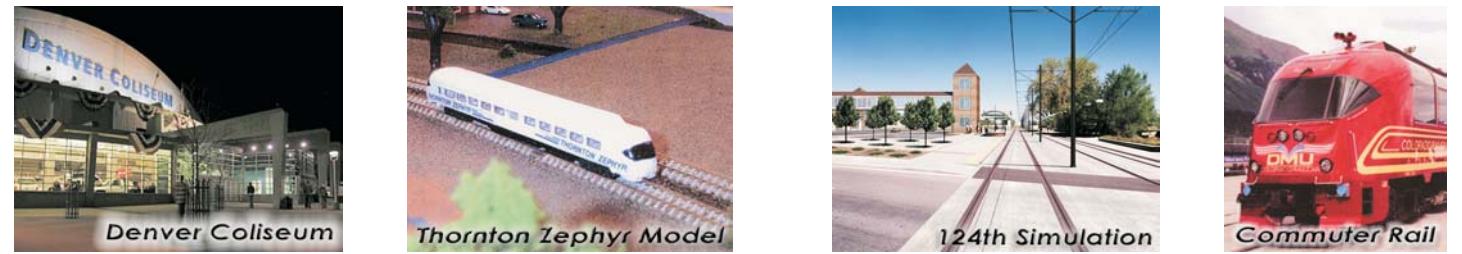


Figure 1-6

April 22, 2004

## Southeast Corridor Enhancements

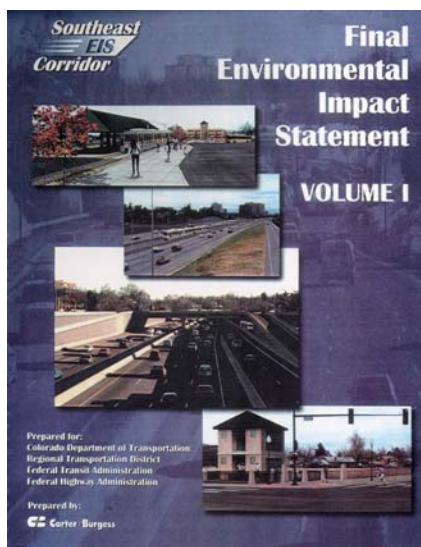
The Southeast Corridor (T-REX multi-modal project) is currently under construction by RTD and CDOT, and remains on-budget and on-time to open in 2006. The Southeast

**Southeast Corridor LRT will be enhanced to serve growing demand and extended to serve additional communities.**

Corridor includes 19.1 miles of light rail transit with 13 stations along I-25 from Broadway to Lincoln Avenue and along I-225 from I-25 to Parker Road, as well as reconstruction and widening of I-25.

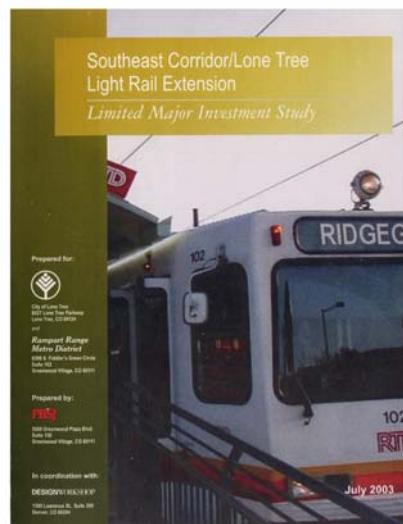
In 2002, the City of Lone Tree approached RTD with a formal request to evaluate the feasibility of joining the RTD district. (At that time, the entire City was not within the legal boundaries of the District).

The request was made to better serve the current and future transit needs of the residents and developing commercial areas. The City of Lone Tree and RTD partnered to conduct a study to evaluate the feasibility of extending the current Southeast Corridor light rail line south and east to serve the City's current and future developments. The study recommended the extension of light rail south along I-25 to a new station at the



Health One Hospital Complex on the west side of I-25, a cross-over of light rail to the east side of I-25 to a new station at the planned Lone Tree Town Center, and an extension south to an end-of-line station at RidgeGate. The City and RTD worked cooperatively to develop a supporting bus plan. In July 2003, the RTD Board of Directors accepted voter petitions from the City of Lone Tree to hold an election in November 2003 for the purposes of joining the RTD District. On November 4, 2003, Lone Tree voters approved annexation into the District with support from 73 percent of voters. The Lone Tree extension improvements are subject to the results of the final environmental process.

The FasTracks Plan would fund the 2.3-mile light rail extension with three stations into the City of Lone Tree, upgrade the remainder of the 13 planned T-REX light rail stations to accommodate four-car



trains, add 520 spaces to the Lincoln park-n-Ride, and add bicycle and pedestrian improvements at Arapahoe and Bellevue.

# Southeast Corridor Enhancements

## FASTTRACKS RTD

### Project Description

The Southeast Corridor project (also known as T-REX), currently under construction, is a 19.1-mile light rail extension from I-25/Broadway to Lincoln Avenue in Douglas County with an additional connection from I-25 to Parker Road along I-225. The project is expected to open in Fall 2006.

Enhancements include a 2.3 mile light rail extension to Lone Tree, increasing total corridor parking by 2,520 spaces, and improving existing stations so that they can accommodate four-car trains.

2025	
Service Frequency (peak / offpeak)	4 min/6 min (rail)
Capital Costs	\$ 183M*
Daily Transit Ridership	51,100 - 59,800

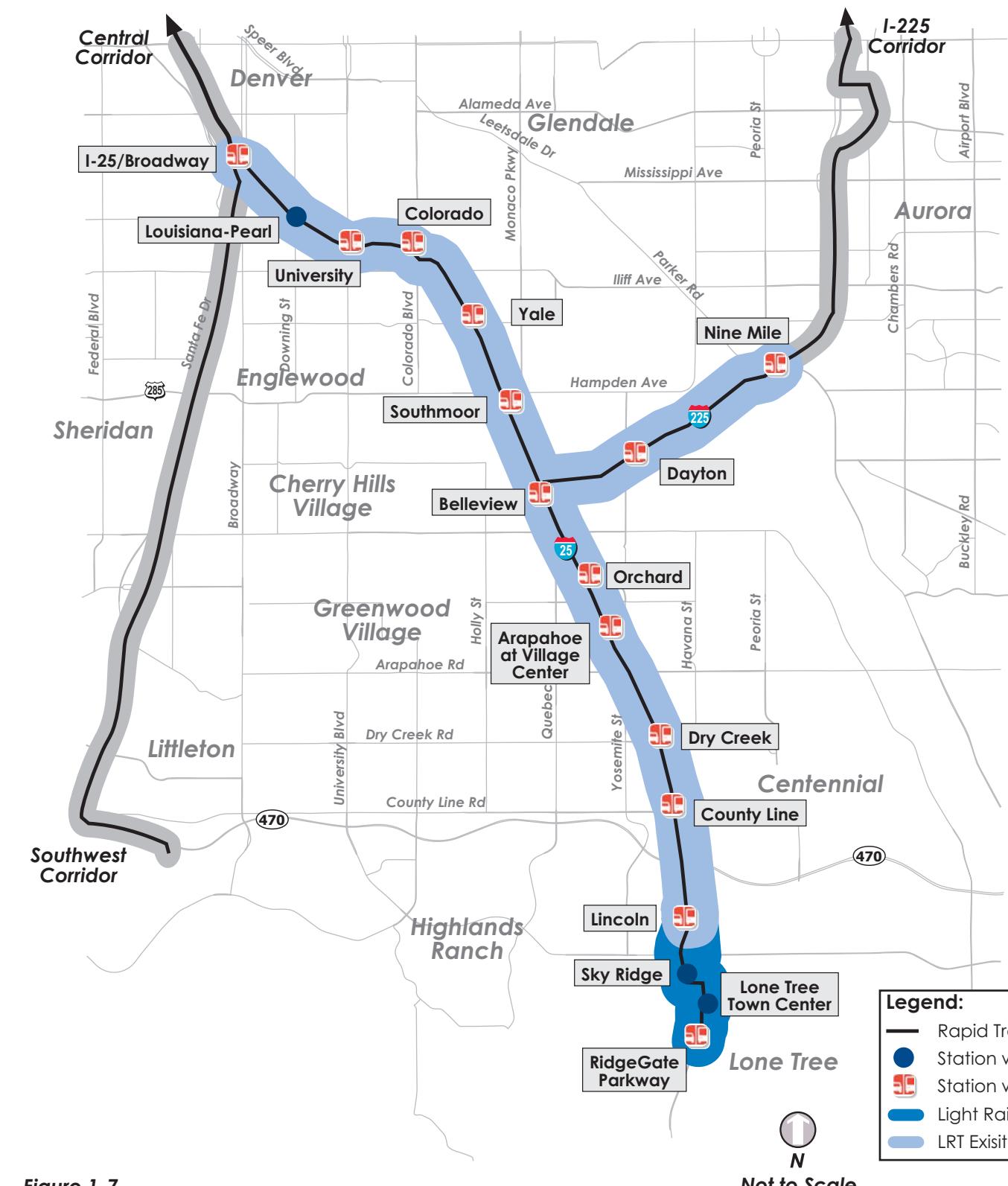
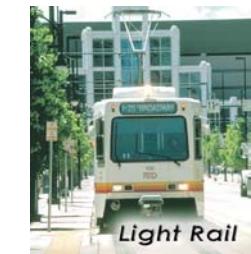
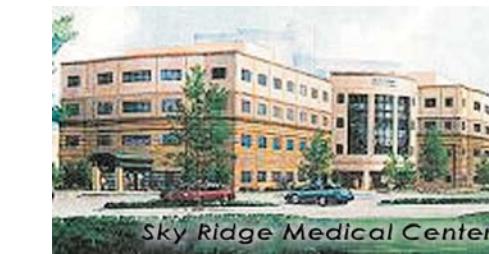
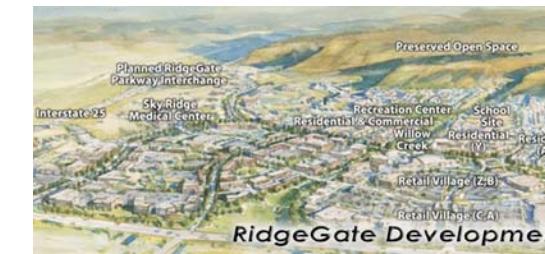
\* inflated dollars, includes vehicles

### Project Benefits

- 2,520 new parking spaces
- Three new light rail stations on the light rail extension to Lone Tree
- Improved/expanded stations to be able to accommodate four-car light rail trains
- Pedestrian amenities at Bellevue and Arapahoe at Village Center stations
- Peak hour travel time savings (transit vs auto) in 2025
  - RidgeGate to Downtown Denver = 33 minutes
- Economic Development Opportunities:
  - Colorado Station – the City of Denver recently adopted the Colorado Station Area Framework Plan for the area surrounding the Colorado Station that emphasizes creating a dense mixed-use development that emphasizes residential uses.
  - Bellevue Station – approximately 50-acres on the Mountain View golf course site have been rezoned to accommodate a compact, mixed-use development with 2,000 residential units, 2.2 million square feet of office, 250,000 square feet of retail and 150,000 square feet of hotel.
  - Arapahoe at Village Center Station – The City of Greenwood Village has developed plans for the creation of a town center on the east side of I-25. The plan calls for the development of medium density residential and retail land uses on the 5-acre site directly adjacent to I-25, across from the light rail station.

### Southeast Corridor Parking

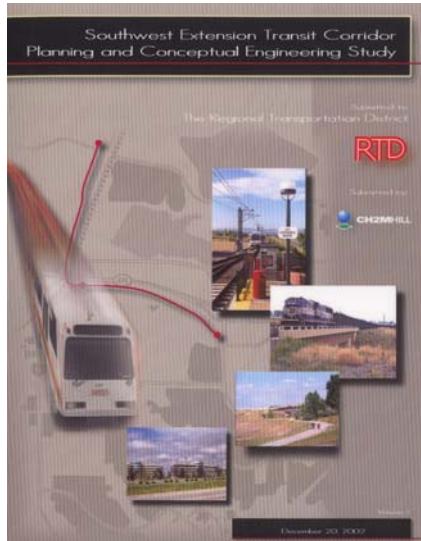
Station	Existing Spaces	Spaces Under Construction	New Spaces	Total Spaces
University	0	540	0	540
Colorado	0	363	0	363
Yale	0	129	0	129
Southmoor	496	292	0	788
Bellevue	0	59	0	59
Dayton	0	250	0	250
Nine Mile	1225	0	0	1,225
Orchard	0	48	0	48
Arapahoe at Village Center	358	1,459	0	1,817
Dry Creek	0	235	0	235
County Line	0	388	0	388
Lincoln	0	1,120	520	1,640
RidgeGate	0	0	2,000	2,000
<b>Total Spaces</b>	<b>2,079</b>	<b>4,883</b>	<b>2,520</b>	<b>9,482</b>



## **Southwest Corridor Enhancements**

The Southwest Corridor light rail line opened in July 2000, on-time and within budget. The 8.7-mile light rail line extends parallel to Santa Fe Drive from the terminus of the Central Corridor at I-25 and Broadway to Mineral Avenue in Littleton with five existing stations. Since its opening, the Southwest Corridor has doubled ridership projections and has experienced parking shortages at the park-n-Rides, particularly at Englewood City Center and at the end-of-line station at Mineral Avenue.

Based on the overwhelming success of this corridor, RTD initiated a study to evaluate alternatives to accommodate existing and future demand. The *Southwest Extension Transit Corridor Planning and Conceptual Engineering*, study was completed in December 2002 and recommended extending the Southwest light rail line to Highlands Ranch. FasTracks would fund this 2.5-mile extension into Highlands Ranch, including a new end-of-line station at C-470/Lucent Boulevard with 1,000 new parking spaces. The implementation of this extension is subject to a final environmental process.



FasTracks includes a new station at Bates Avenue in Englewood, contingent on a successful financial and operational arrangement between the city, RTD, and adjacent property owners. This agreement would commit the city to share in the cost of the station with RTD and the developer of the adjacent transit-oriented development. Further, FasTracks also includes an additional 440 parking spaces adjacent to Englewood City Center station, and modifications to existing light rail stations to accommodate four-car light rail trains.

Consistent with RTD's transit oriented development policies, RTD will be promoting the construction of a

**Southwest Corridor LRT will be enhanced to serve growing demand and extended to serve Highlands Ranch.**

parking structure at Mineral Avenue through a public/private partnership.

# Southwest Corridor Enhancements

## FASTTRACKS RTD

### Project Description

The Southwest Corridor light rail line opened in July 2000 as an 8.7-mile extension from I-25/Broadway to Mineral Avenue in Littleton. The Southwest Corridor has five stations with nearly 2,600 parking spaces.

A number of enhancements are proposed as part of FasTracks to make the Southwest line even more successful than it is today. Enhancements include improving existing stations so that they can accommodate four-car trains, a total of 440 additional parking spaces at the Englewood Station, and extending the line south from Mineral Avenue to Lucent Boulevard in Highlands Ranch with a new station at C-470/Lucent Boulevard with 1,000 new parking spaces. Finally, a new station will be added in Englewood at Bates Avenue when a new planned development is constructed.

2025	
Service Frequency (peak / offpeak)	6 min/7.5 min (rail)
Capital Costs	\$ 164.1M*
Daily Transit Ridership	20,200 - 23,600

\* inflated dollars, includes vehicles

### Project Benefits

- 1,440 new parking spaces in addition to the 2,597 existing parking spaces
- Two new light rail stations, one in Highlands Ranch and one in Englewood
- Five improved/expanded stations to be able to accommodate four-car light rail trains
- Peak hour travel time savings (transit vs auto) in 2025
  - C-470/Lucent Blvd to Downtown Denver = 52 minutes
- Percentage of people using transit in the peak travel period, current/with FasTracks = 19%/21%
- Economic Development Opportunities:
  - Bates Station – the City of Englewood is currently working with developers to plan a new, compact mixed-use development adjacent to the proposed new station. Construction of this station is contingent on a successful financial and operational arrangement between the city, RTD, and adjacent property owners. This agreement would commit the city to share in the cost of the station with RTD and the developer of the adjacent development.
  - Englewood Station – the City of Sheridan is planning a 318-unit residential development west of Santa Fe Drive with a direct pedestrian connection to the station. The City of Englewood also has plans to redevelop industrial properties west of Santa Fe adjacent to the station into multi-family residential.

### Southwest Corridor Parking

Station	Existing Spaces	New Spaces	Total Spaces
Evans	99	0	99
Englewood	910	440	1,350
Littleton	361	0	361
Mineral	1,227	0	1,227
Lucent	0	1,000	1,000
<b>Total Spaces</b>	<b>2,597</b>	<b>1,440</b>	<b>4,037</b>

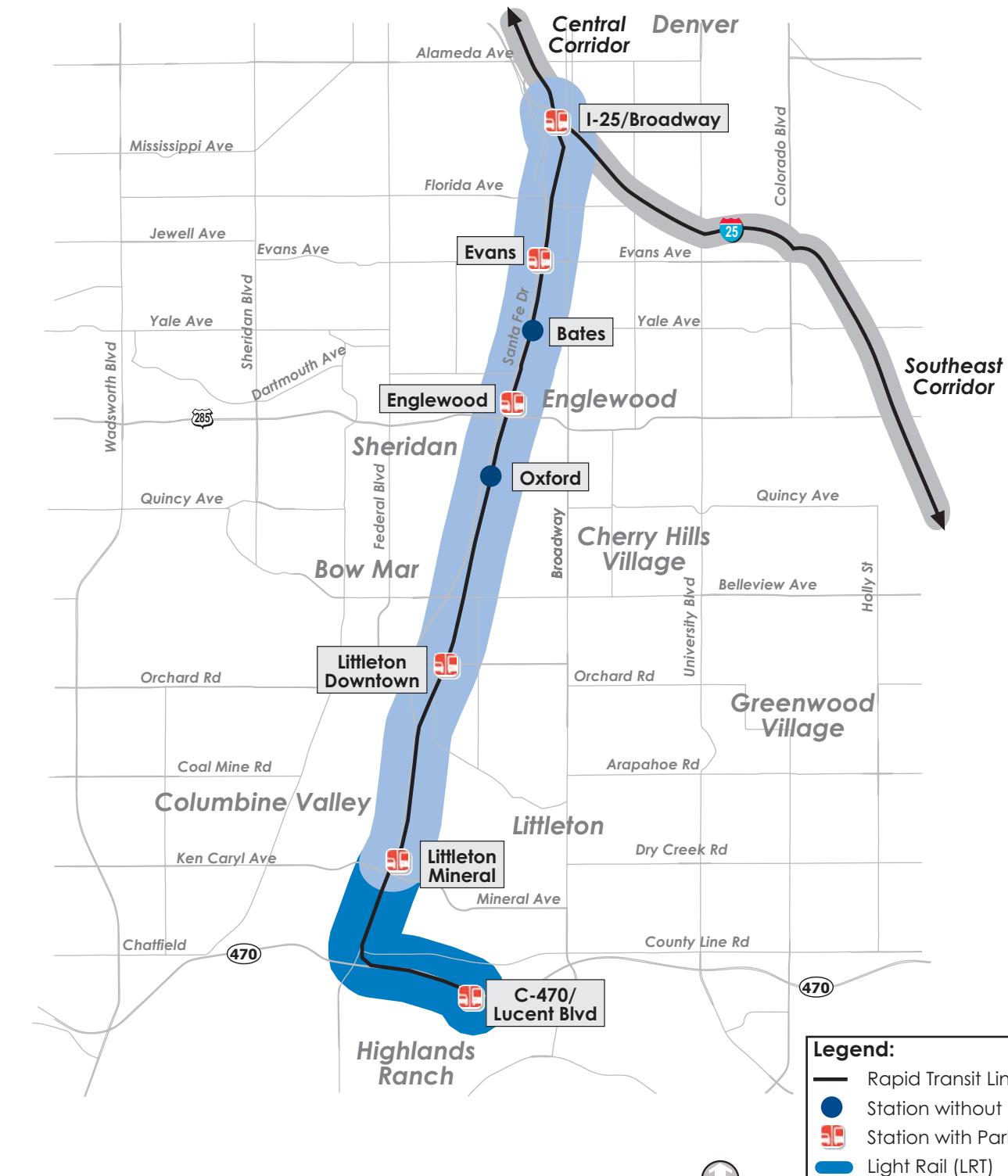
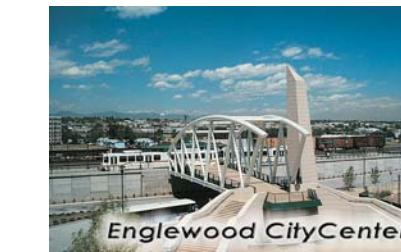
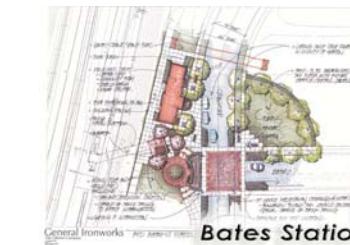
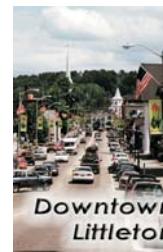


Figure 1-8

April 22, 2004

## US 36 Corridor and Longmont Extension

The US 36 Corridor consists of two elements, Bus Rapid Transit and Commuter Rail. The Bus Rapid Transit highway portion would extend 18 miles along US 36 from I-25 to Table Mesa park-n-Ride in the City of Boulder and includes 6 stations located in the center of US 36 for easy loading and unloading of passengers. BRT service would extend past Table Mesa along Broadway to CU-Boulder and north along 28<sup>th</sup> Street to 30<sup>th</sup> & Pearl. The commuter rail portion of this corridor would extend along railroad right-of-way from Denver Union Station in downtown Denver to the City of Boulder and then on to the City of Longmont. This 38.1-mile commuter rail corridor will have seven stations.

US 36 is the major artery connecting the northwestern communities of Boulder, Superior, Louisville, Lafayette, Broomfield, Westminster and Arvada. The corridor provides access to numerous employment concentrations, including the City of Boulder, the University of Colorado, the Interlocken Business Park, the Flatiron Crossing regional mall and downtown Denver.

Travel patterns along US 36 have changed significantly over the years with the expansion of urbanized development along the corridor. Commuter trips are now destined to multiple locations along the corridor, which has resulted in significant increases in bi-directional congestion along US 36. Transit usage is high, with many park-n-Rides and buses at or over capacity.

RTD conducted an MIS between 1998 and 2001 for the corridor which recommended a set of multi-modal transportation improvements including extension of HOV

**US 36 Commuter Rail and BRT will improve and extend service for one of the largest transit markets in the region.**

lanes along US 36 and implementation of Bus Rapid Transit service with on-line stations, widening portions of US 36, a single track commuter rail line along the railroad right-of-way, and a bikeway along US 36. Subsequent planning by RTD and the communities resulted in a recommendation to extend the commuter rail line to the City of Longmont along the railroad right-of-way. In 2003, RTD and CDOT initiated an Environmental Impact Statement for the US 36 Corridor. This study is currently on-going.

The FasTracks Plan would fund the transit recommendations from the MIS, including funds to upgrade the existing railroad tracks and build a new adjacent track for the commuter rail line to Boulder, extend the commuter rail line to Longmont in a single track configuration, and add six commuter rail stations. Parking will be added in Niwot and Longmont. FasTracks will also include a commuter rail station in Westminster at 71<sup>st</sup> Avenue and Lowell Boulevard, and new and expanded park-n-Rides for both rail and bus service. For Bus Rapid Transit, RTD will provide slip ramps and access improvements to park-n-Rides from Boulder to Denver and funding for centerline Bus Rapid Transit stations, platforms and a proportional share of HOV lanes (\$66 million in 2002 dollars) with coordination from CDOT. Also included is funding (\$8 million in 2002 dollars) for the commuter bikeway. The final transportation improvements in this corridor are subject to the results of the on-going EIS.



# US 36 Corridor/Longmont Extension

## FASTTRACKS RTD

### Project Description

The US 36 Corridor and Longmont Extension includes a 38.1-mile commuter rail line along the existing railroad right-of-way between Denver Union Station in Downtown Denver and Longmont (through Boulder). In addition to commuter rail, 18 miles of BRT/HOV lanes are proposed in the median of US 36 between I-25 and the Table Mesa park-n-Ride in Boulder. FasTracks includes funding for slip ramps and access improvements to park-n-Rides. In addition, FasTracks will provide funding for centerline BRT stations, platforms and a proportional share of HOV lanes (\$66 million) as part of future CDOT improvements to US 36.

The US 36 Corridor project will enhance transit connections between Downtown Denver and the communities of Westminster, Broomfield, Louisville, Superior, Boulder, and Longmont. The project improvements will provide more options to commuters and others traveling along heavily congested US 36 which is expected to see a 49 percent increase in traffic by 2025.

2025	
Service Frequency (peak / offpeak)	15 min/30 min (rail) 2 min/4 min (bus)
Capital Costs	\$ 791.4M*
Daily Transit Ridership	8,600 - 10,100 (rail)/16,900 (bus)

\* inflated dollars, includes vehicles

### Project Benefits

- Seven new commuter rail stations
- Slip ramps and access improvements to bus park-n-Rides along US 36
- Peak hour travel time savings (transit vs auto) in 2025
  - Longmont to Downtown Denver = 57 minutes (Commuter Rail)
  - Boulder to Downtown Denver = 61 minutes (BRT)
- Percentage of people using transit in the peak travel period, current/with FasTracks = 16%/18%
- Economic Development Opportunities:
  - 71<sup>st</sup>/Lowell – The City of Westminster is examining the potential of redevelopment of over 100 acres surrounding the 71<sup>st</sup>/Lowell station in the south Westminster area. The City's plans focus on transit-oriented development and traditional neighborhood development.
  - 30<sup>th</sup>/Pearl – the City of Boulder has planned the development of the Boulder Transit Village on a 7.5-acre parcel adjacent to the 30<sup>th</sup>/Pearl station. The transit village will be a medium to high density development with a mix of residential, open space, and commercial uses.

### US 36 Corridor Parking

#### Rail Parking

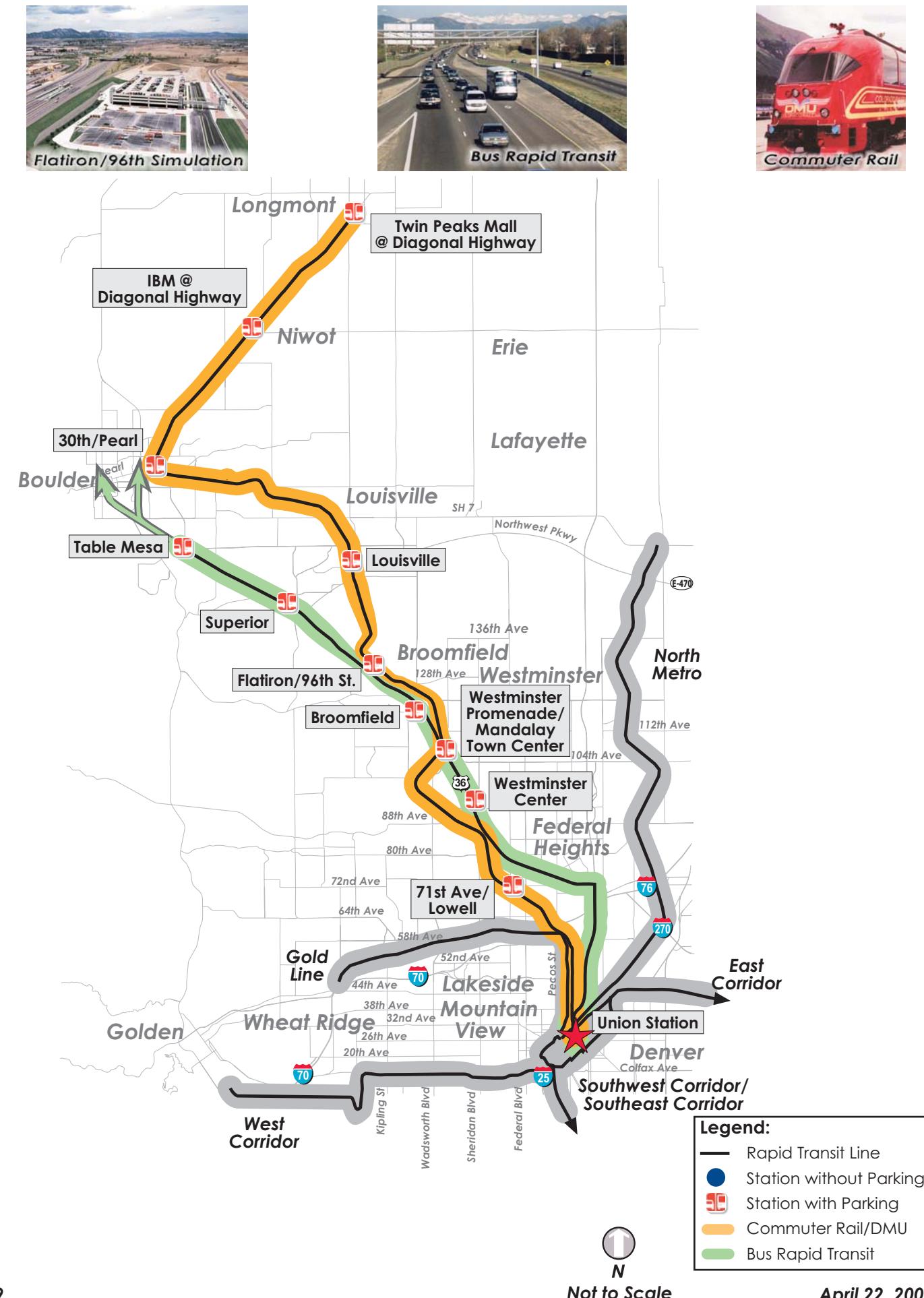
Rail Station	Existing Spaces	New Spaces	Total Spaces
Longmont	0	300	300
IBM	0	500	500
30 <sup>th</sup> /Pearl	0	100	100
Louisville	0	400	400
Flatiron*	0	560	560
71 <sup>st</sup> /Lowell	0	100	100
New TBD**	0	1,000	1,000
<b>Total Spaces</b>	<b>0</b>	<b>2,960</b>	<b>2,960</b>

\* Shared Rail/BRT Station.

\*\* An additional 1,000 spaces is needed for parking for commuter rail. The location of these additional spaces will be determined during the US 36 EIS process (currently underway).

#### BRT Parking

BRT Station	Existing Spaces	New Spaces	Total Spaces
Table Mesa	824	0	824
Superior	455	0	455
Flatiron*	264	600	864
Broomfield	905	750	1,655
Westminster Promenade/Mandalay Town Center*	217	83	300
Westminster	1,310	0	1,310
<b>Total Spaces</b>	<b>3,975</b>	<b>1,433</b>	<b>5,408</b>



## West Corridor

The West Corridor is a 12.1-mile light rail transit line that extends west from Denver Union Station in downtown Denver through west Denver, Lakewood and Jefferson County and is served by 11 light rail stations. The line follows the former Associated Railroad right-of-way (approximately 12<sup>th</sup> and 13<sup>th</sup> Avenues), and parallels West 6<sup>th</sup> Avenue and I-70, two of the most congested highways in the region. Significant population and employment growth is

**West Corridor LRT will provide a connection between Golden, the Federal Center, and Downtown Denver.**

forecast for the corridor, creating significant burdens on both the highways and arterials in the corridor. The West Corridor would serve a significant number of low-income, minority and non-vehicle households that are transit-dependent and provide access to employment opportunities in downtown Denver and the City of Lakewood. The West Corridor has been the subject of transportation improvement studies for more than 25 years, and state and local agencies are in agreement of the need for additional transportation capacity improvements.

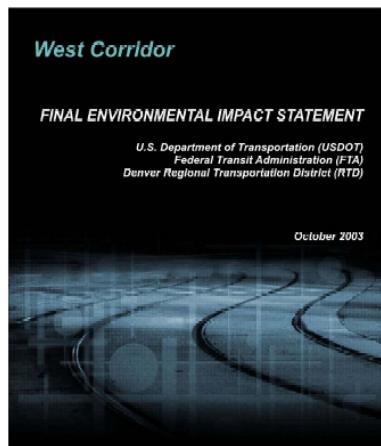
RTD initiated an MIS for the West Corridor in 1997 which recommended light rail transit in the corridor, as well as bicycle, pedestrian and roadway improvements. In 2001, RTD initiated an EIS and preliminary engineering efforts for the West Corridor. The RTD Board adopted the recommendations from the Draft EIS in August 2003 and RTD published a Final EIS in September

2003. RTD submitted the Final EIS to the Federal Transit Administration (FTA) in October 2003 and held a Final EIS Public Meeting to review the document. The FTA issued the Record of Decision (ROD) on April 19, 2004.

The West Corridor begins at Denver Union Station and follows the CPV Spur to the Auraria West Station. It then proceeds south to approximately 14<sup>th</sup> Avenue. From this point, it is grade-separated from the Consolidated Mainline by a structure over the freight rail tracks and the South Platte River. The alignment then follows the former Associated Railroad right-of-way alignment westerly. The alignment remains on the Associated Railroad from the South Platte River through the

park along Lakewood Gulch westerly to Quail Street. At Quail, the alignment turns south still remaining on the existing Associated Railroad trackbed then across 6<sup>th</sup> Avenue on a structure into the Federal Center. From the Federal

Center the alignment continues in a westerly direction under 6<sup>th</sup> Avenue and Union Street and parallels 6<sup>th</sup> Avenue on the north side of the highway to its final end-of-line station on the west side of the Jefferson County Government Center. The FasTracks Plan would fund all recommendations from the EIS.



# West Corridor

## FASTTRACKS RTD

### Project Description

The West Corridor is a 12.1-mile light rail transit project which will operate along the former Associated Railroad right-of-way (near 12<sup>th</sup> and 13<sup>th</sup> Avenues) from Downtown Denver to the Lakewood Industrial Park, and continue west to the Jefferson County Government Center in Golden.

The West Corridor provides enhanced connections between Downtown Denver and key activity centers such as Invesco Field at Mile High, the Federal Center, and the Lakewood City Commons/Lakewood Civic Center in Jefferson County. The West Corridor also provides a new, high capacity multimodal transportation corridor as an alternative to 6<sup>th</sup> Avenue which is projected to experience more than a 20 percent increase in traffic by 2025 (Source: West Corridor Final EIS).

2025	
Service Frequency (peak / offpeak)	5 min/15 min (rail)
Capital Costs	\$ 508.2M*
Daily Transit Ridership	31,200 - 36,500

\* inflated dollars, includes vehicles

### Project Benefits

- Over 5,000 new parking spaces in addition to the existing 646 spaces
- Eleven new light rail stations
- Peak hour travel time savings (transit vs auto) in 2025
  - Jefferson County Government Center to Downtown Denver = 10 minutes
  - Jefferson County Government Center to Denver Tech Center = 24 minutes
- Percentage of people using transit in the peak travel period, current/with FasTracks = 7%/26%
- Economic Development Opportunities:
  - Denver Federal Center – RTD, in conjunction with the GSA, and the City of Lakewood have completed a redevelopment plan for a 235 acre site with the Federal Center. This plan calls for high density mixed-use development, including 29 million square feet of office, 0.6 million square feet of retail and over 1700 residential units.
  - Wadsworth Station – the Wadsworth station area has been identified as a mixed-use redevelopment opportunity by the City of Lakewood. Plans are underway for new retail development along Colfax.
  - Colfax Avenue – Denver and Lakewood have both identified Colfax Avenue as a priority area for redevelopment with enhanced connections to the West Corridor light rail.

Station	Existing Spaces	New Spaces	Total Spaces
Federal	0	2,000	2,000
Sheridan	0	800	800
Wadsworth	0	1,000	1,000
Oak	0	200	200
Federal Center	646 *	354	1,000
JeffCo Government Center	0	700	700
<b>Total Spaces</b>	<b>646</b>	<b>5,054</b>	<b>5,700</b>

\* The existing 646 spaces at Cold Spring park-n-Ride will be replaced at a new Federal Center location.

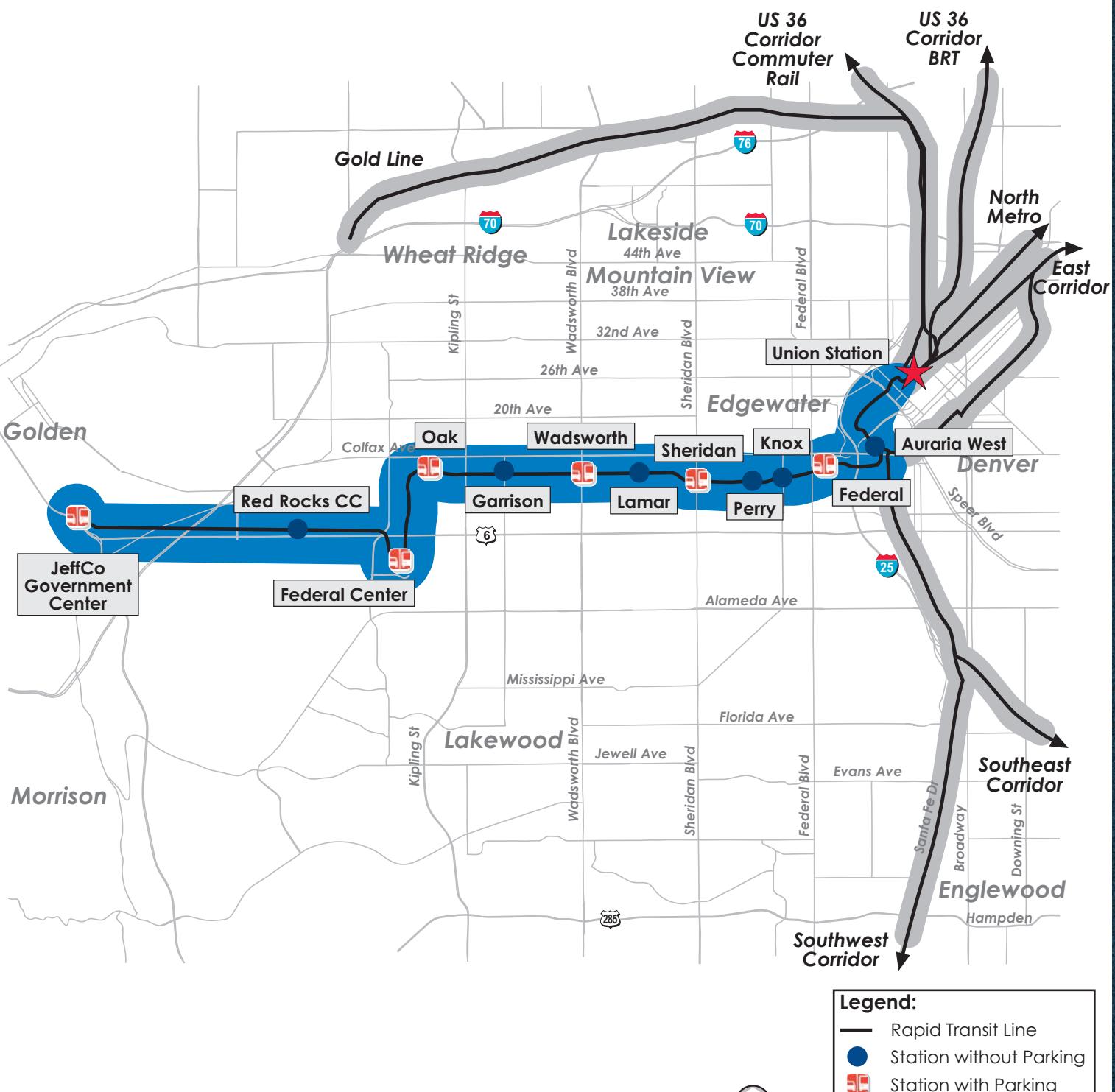


Figure 1-10

April 22, 2004

## 1.2 Bus Service Enhancements

### 1.2.A Enhanced Bus Services

Bus service will continue to be a major component of RTD's transit services. FasTracks offers a family of bus services tailored to individual markets and linked together to create a comprehensive network. RTD recognizes that basic bus services are critical to our transit-dependent customers, not only non-driving elderly and disabled patrons, but also those in lower income communities who depend upon transit accessibility for economic and quality of life factors. RTD will continue to operate Local, Limited, Express, and Regional fixed route service, call-n-Ride, access-a-Ride, seniorRide and Special Event services. FasTracks adds several new bus service elements such as an extensive bus

**Bus Service Enhancements will serve growing needs and optimize the efficiency of services provided.**

feeder service to the rail and BRT stations, suburb-to-suburb bus service along major corridors, and timed transfer points to improve bus connections and make it more convenient for passengers to travel throughout the region. Following RTD policy, all bus service in FasTracks will take into account community input, RTD service standards and the results of the Environmental Impact Statement (EIS) process. Communities also have the option of choosing other RTD services, such as call-n-Rides instead of fixed route bus service, to meet their local service needs.

By 2025, RTD will provide an additional 700,000 hours of bus service annually, an increase of 36 percent over 2003 bus service levels. **Figure 1-11** illustrates RTD's bus service enhancements, with new and improved service highlighted. **Figure 1-12** provides an overview of future transit service frequencies for the enhanced FasTracks bus plan.

Enhanced bus services in the FasTracks Plan include:

- **Bus Feeder Service to Rapid Transit**

Every rapid transit corridor will have a reconfigured local bus network to take advantage of connectivity to rapid transit lines and serve new destinations as a result of growth through 2025.

Enhanced feeder service to rapid transit lines is proposed throughout the region, as illustrated in **Figure 1-12**, further enhancing connections at travel origins and destinations.

- **Suburb-to-Suburb Service**

The FasTracks Plan incorporates suburb-to-suburb bus service, recognizing that employment, residential, commercial and educational opportunities are dispersed throughout the metro area.

New suburb-to-suburb service includes transit connections between major employment centers and park-n-Rides in the outlying areas. The suburb-to-suburb service is designed around a network of timed FastConnects, or transfer points.

- **FastConnects**

FastConnects provides efficient connections for those transferring from one transit vehicle to another. This applies to bus-to-bus, bus-to-rail, bus-to-BRT, and rail-to-bus transfers.

Service is designed so that buses and trains traveling to multiple destinations are timed to arrive at a major destination or transfer facility at the same time, minimizing the time a passenger has to wait. FastConnects improves the overall efficiency of the transit network and reduces travel times for patrons.

The suburb-to-suburb bus service connections including FastConnects is shown in **Figure 1-13**.

# 2025 Bus System Enhancements

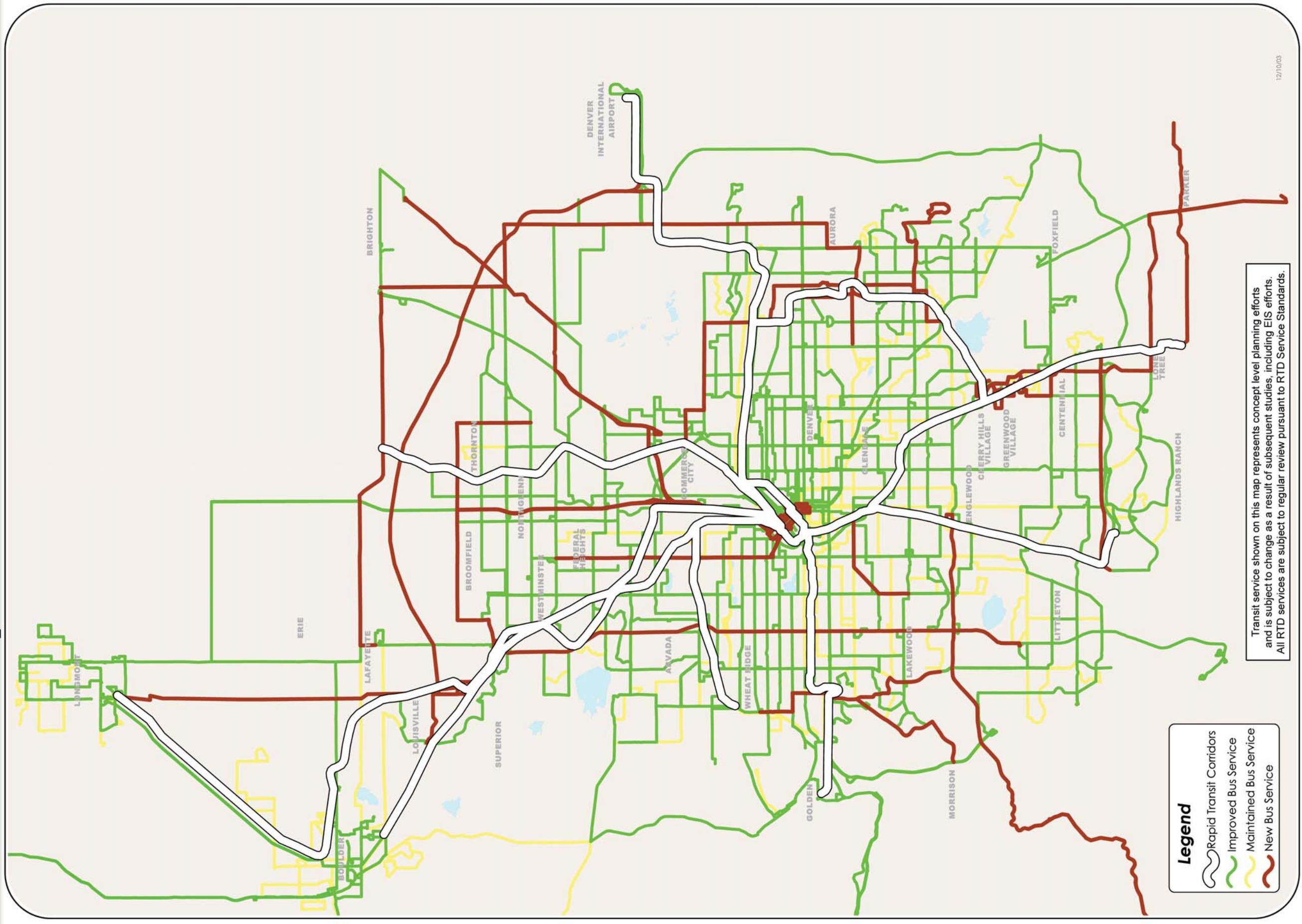


Figure 1-11

# 2025 Bus System Enhancements

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# 2025 Peak Bus Service Levels

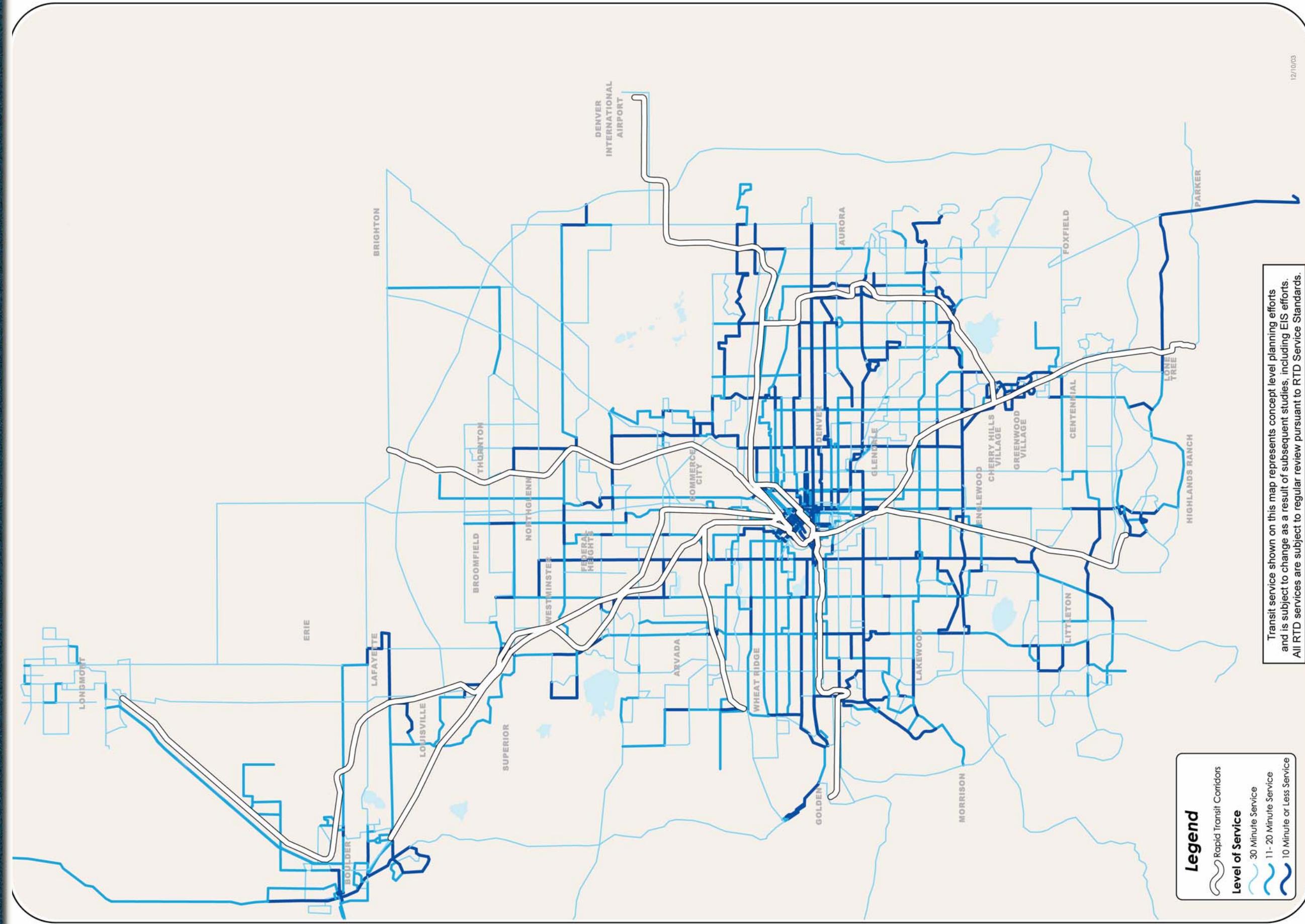


Figure 1-12

# 2025 Peak Bus Service Levels

April 22, 2004

# Suburb to Suburb Bus Service with FastConnects

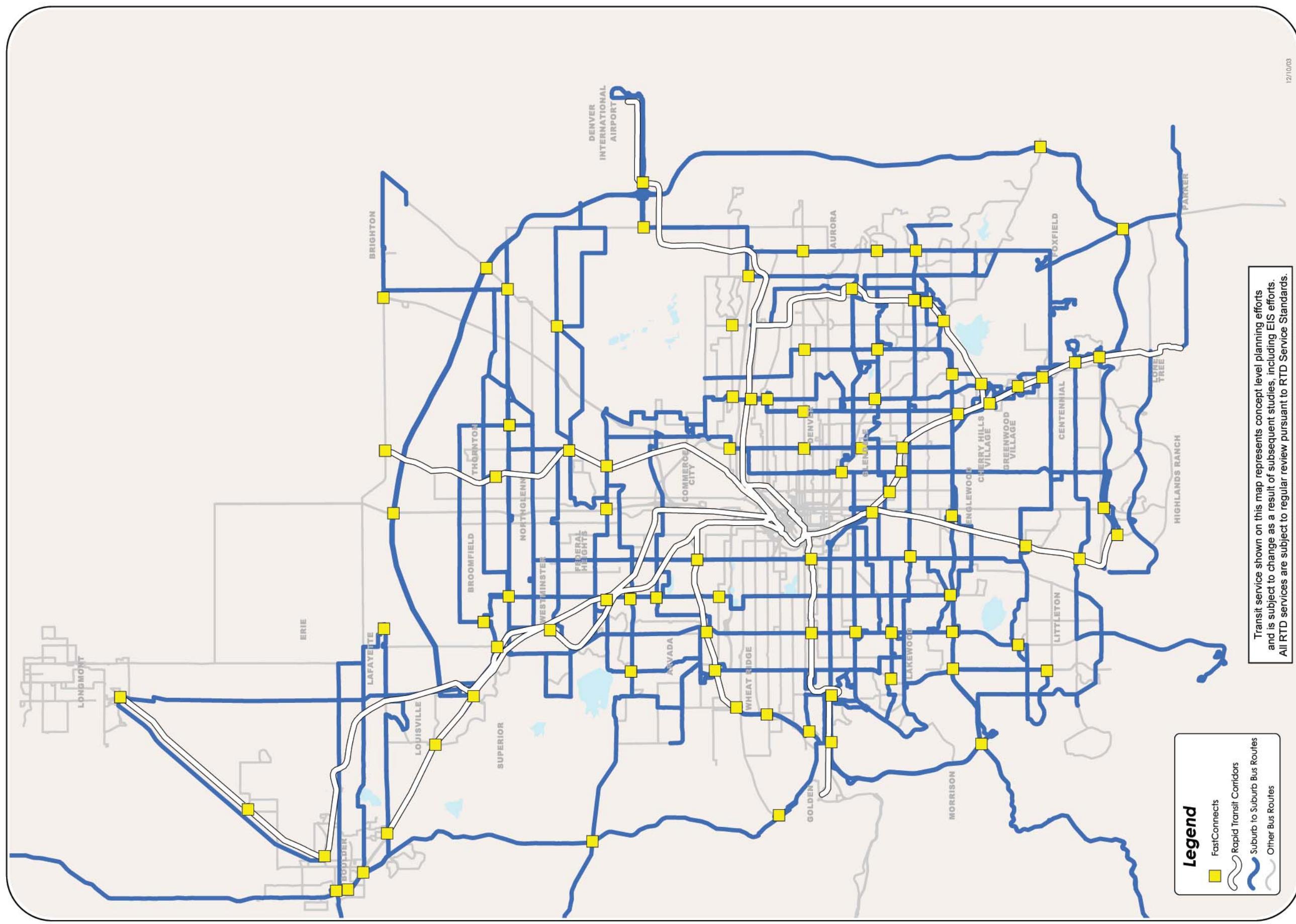


Figure 1-13

April 22, 2004

# Suburb to Suburb Bus Service with FastConnects

### 1.3 Transit Facilities

The FasTracks Plan will include investments in transit facilities to complement the proposed rapid transit lines and enhanced bus service. Facilities include park-n-Rides, transit centers and FastConnects.

#### 1.3.A park-n-Rides

Park-n-Rides are the backbone of the RTD transit system. Currently there are 65 park-n-



Rides with over 21,000 spaces. These facilities provide flexibility for those who want to use transit, but

want the convenience of having direct access to their own vehicle. FasTracks will provide funding to increase the number of parking spaces at existing park-n-Ride facilities and construct new park-n-Rides to serve growing areas of the metro region.

FasTracks has identified nine park-n-Rides to be expanded and 31 new park-n-Rides to be built along major transportation corridors for a total of over 21,000 new parking spaces. FasTracks will increase the number of parking spaces (both existing and under construction) throughout the district by over 80%. **Figure 1-14** shows the park-n-Ride improvements provided by the FasTracks Plan.

#### 1.3.B Transit Hubs

Transit hubs are facilities where extensive transfers between transit can occur (i.e., bus-to-bus transfers, bus-to-rail transfers, bus-to-BRT transfers, and rail-to-rail transfers). In the FasTracks Plan, transit hubs have been assigned to two categories: transit centers and FastConnects.

Transit centers have amenities such as restrooms, passenger seating, and concessions. These facilities serve as collection and distribution points for buses and rail within central business districts (CBDs). RTD transit centers include Market Street Station, Civic Center Station, and the Boulder Transit Center at 14<sup>th</sup>/Walnut Street. Denver Union Station (DUS), described in the next section, will serve as the major transit center hub for the region.

FastConnects are designated points where extensive transit transfers can occur outside the CBD. These points may be park-n-Rides, rail stations, designated shopping centers or employment centers where bus routes connect.

At these designated points, transfers between buses and/or rail are coordinated to minimize wait times between transfers. The primary purpose of this concept is to improve transit service for suburb-to-suburb travel. The FastConnects concept allows for seamless transit connections between suburbs and minimizes the wait time between connections, dramatically enhancing transit services. At major FastConnects such as the Federal Center and Stapleton, additional passenger amenities will be provided.

# park-n-Rides

## FASTTRACKS RTD

### EXISTING, IMPROVED, AND NEW park-n-Rides

Corridor	Existing/ Planned/ Under Construction Spaces	New Spaces at Existing p-n-Rs	Spaces at New p-n-Rs	Total
Southwest Corridor & Extension	2,597	440	1,000	<b>4,037</b>
Southeast Corridor & Extension	6,962	520	2,000	<b>9,482<sup>1</sup></b>
West Corridor	646	354	4,700	<b>5,700</b>
East Corridor	2,848	0	681	<b>3,529<sup>1</sup></b>
Gold Line	711	400	1,650	<b>2,761</b>
I-225 Corridor	1,225	0	1,800	<b>3,025<sup>1</sup></b>
North Metro Rail	83	17	3,000	<b>3,100</b>
North Metro Bus	2,909	0	750	<b>3,659</b>
US 36 Rail/Longmont Extension	0	0	2,960	<b>2,960</b>
US 36 Bus Rapid Transit	3,975	1,133	300	<b>5,408</b>
Central Corridor	1,685	0	400	<b>2,085<sup>1</sup></b>
Other park-n-Rides	4,105	0	0	<b>4,105</b>
<b>Grand Total<sup>1</sup></b>	<b>26,521</b>	<b>2,864</b>	<b>18,291</b>	<b>47,676</b>

<sup>1</sup> Corridor parking totals for the East, Central and Southeast Corridors reflect shared parking at connecting stations including Nine Mile (1,225 spaces shared between Southeast and I-225 Corridors), Peoria/Smith Road (550 spaces shared between East and I-225 Corridors), 40th and 40th (400 spaces shared between East and Central Corridors). The Grand Total parking numbers subtract out the shared parking at connecting stations to prevent double counting.

N  
Not to Scale

**Legend:**

- Existing/Under Construction p-n-R
- Improved p-n-R
- New p-n-R
- Right-of-Way Preservation

April 22, 2004

Figure 1-14



### 1.3.C Downtown Multimodal Center

Denver Union Station is the proposed location for a Downtown Multimodal Center, a centralized intermodal facility that provides access to all parts of the Denver metro region. As the central intermodal hub for the region, the DUS Vision Plan will provide access to nearly every rapid transit corridor included in FasTracks as well as Regional, Express and Local bus service, the 16<sup>th</sup> Street Mall, Amtrak, the Ski Train, Greyhound, and the new Downtown Circulator.

DUS is located on a 19.5-acre parcel in the Central Platte Valley. The DUS Master Plan, currently under development, has identified a recommended vision for the facility. The recommended vision locates all rail access to DUS underground allowing for the extension of 18<sup>th</sup> Street between Wynkoop and Wewatta Streets. The recommended vision represents the ultimate buildout of DUS beyond FasTracks.

FasTracks includes some of the elements of the recommended vision. Elements not included in FasTracks are to be funded through other potential funding sources such as private development. Elements of the DUS Vision Plan that are part of FasTracks include:

**DUS will be the “Grand Central Station” of Denver as the center of the regional transit system in the heart of the city.**



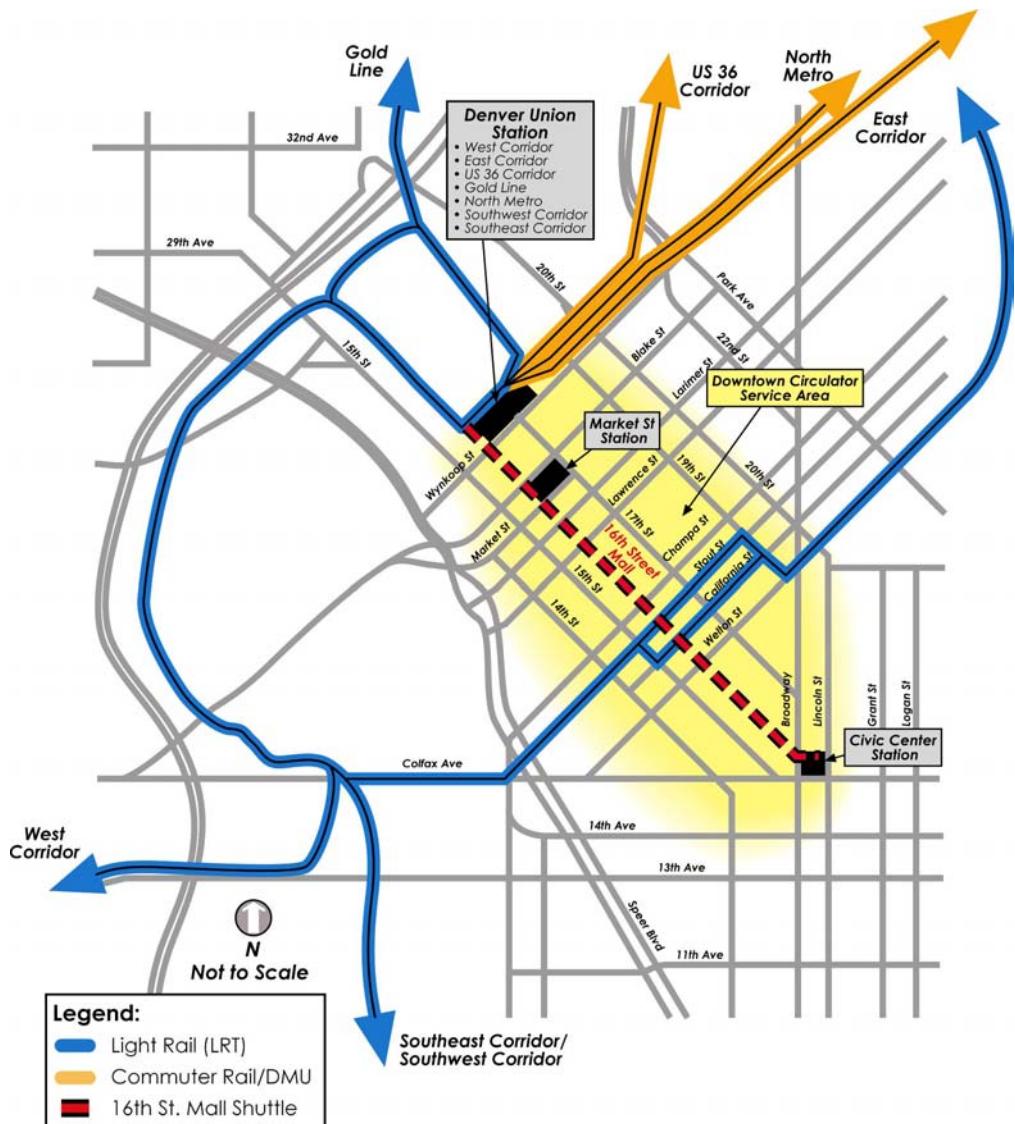
- Construction of below-grade light rail access into DUS;
- Improvements to at-grade commuter rail access into DUS;
- Construction of components to facilitate transfers such as underground passenger waiting areas, concessions and restrooms; and
- Accommodation of multiple forms of transportation including Ski Train, Amtrak, taxis, the 16<sup>th</sup> Street Mall Shuttle, and the new Downtown Circulator.



In addition to providing enhanced connections, Denver Union Station also provides an opportunity to create a dense, mixed-use transit oriented development adjacent to the transit facility. The Denver Union Station Master Plan identifies an opportunity for nearly two million square feet of development on the DUS site.

The transportation improvements at DUS are subject to the results of the Environmental Impact Statement in progress.

Figure 1-15: Downtown Denver Transit Connections



## 1.4 Transit Amenities

The FasTracks Plan incorporates improvements to increase passenger security, convenience and access to the system. Major elements include the following:

### 1.4.A Passenger Security and Information

FasTracks will provide an expansion of RTD's passenger security system. Emergency phones and security cameras will be installed at all stations and major park-n-Rides. In addition to cameras on RTD buses and rail vehicles, security provisions include remote monitoring of rail and bus stations through RTD's Security Command Center at the Mariposa light rail facility. Using state-of-the-art equipment, RTD is able to transmit live camera pictures to a viewing center located inside the



RTD Security Command Center. This room is monitored by trained technicians who review the live pictures for signs of activity requiring either a law enforcement response or the rendering of other aid. All cameras record continuously and these recordings are kept for periods of up to one month to allow after-the-fact review of incidents. RTD places cameras on train platforms and in parking lots that service light rail stations. Upon completion of the T-REX project, 256 cameras will be monitored. In addition, RTD employs a private security firm to provide on-site monitoring of RTD transit facilities.

Real time passenger information will be in place for major rail stations along the Southwest, Southeast and Central Platte Valley rail lines (including Denver Union Station). With FasTracks, the communications infrastructure will be put in place as part of the construction of the rapid

**Transit Amenities will provide security and enhance the travel experience for transit patrons through the system.**

transit corridor lines for real time passenger information for other stations.

### 1.4.B Bicycle Facilities

FasTracks will provide bike racks at all stations, bike lockers at major stations and park-n-Rides, and will accommodate bike access to rail stations and park-n-Rides from existing bike paths and bike routes. FasTracks will also contribute half the cost of the proposed bike path along the US 36 corridor.





# **Regional Transportation District FasTracks Financial Plan**

April 22, 2004

## Executive Summary

The Regional Transportation District (the “District” or “RTD”), has developed a comprehensive \$4.7 billion Plan, known as “FasTracks” for addressing mobility needs in the metropolitan Denver region over the next twelve years. The ability to implement the FasTracks plan depends on a variety of financial assumptions and projections that have been developed using the best available current estimates of costs, reasonably anticipated federal funding based on current federal law and regulations, and revenues from other sources including RTD sales tax and fare collections. Over the anticipated build-out of twelve years specific cost items, federal and other contributions, and RTD revenues may vary. Based on the extensive analysis behind the financial assumptions used, RTD expects to deliver the major transit corridors and related improvements within the time frames set forth previously. RTD cannot guarantee that each separate assumption will be met, and expects that over a twelve year time-frame, certain adjustments and modifications will be required. This section details the assumptions used and provides further explanation as to how RTD expects to pay for the FasTracks Plan.

Unlike typical transit development strategies, which are pursued one corridor at a time and can take decades to accomplish, the Plan offers a comprehensive, region-wide approach to transit development.

Under the Plan, 40 miles of Light Rail, 79 miles of Commuter Rail and 18 miles of Bus rapid transit improvements will be developed between 2005 and 2017.

Base bus service levels will increase by 1% per year between the years 2006 and 2020, and by 1.5% per year between 2021 and 2025. Overall, 2025 bus revenue service hours will increase by 30% over 2003 service levels.

In order to finance the Plan, the District will seek voter approval for a 0.4% increase in the regional sales and use tax. This will bring the total transit tax rate in the District to 1%, comparable to other areas in the Western United States with urban rail systems.

The Plan also anticipates \$815.4 million in Federal discretionary new start grant funding in conjunction with \$110.0 million in other Federal grant funding, and contributions from local jurisdictions benefiting from transit in an amount equal to 2.01% of total project costs or \$95.03 million system-wide.

In addition to Federal grants, the Plan assumes a loan from the US DOT under the Transportation Infrastructure Finance and Innovation Act of 1998 (“TIFIA”) program in the amount of \$142.7 million.

Table 2-1 summarizes the sources of funds expected to pay for the Plan’s \$4.7 billion of project expenditures:

**Table 2-1**  
**FasTracks**  
**Estimated Sources of Capital Funds**  
**(Year of Expenditure \$ in Thousands)**

<b>Source</b>	<b>Amount</b>	<b>Percentage of Total Cost</b>
Bond Proceeds	\$ 2,365,850	50.16%
COPs Proceeds	203,098	4.31%
TIFIA Loan	142,701	3.03%
Pay as you go Cash	984,959	20.88%
Federal New Start Grant		
Revenues	815,426	17.29%
Other Federal Grant Revenues	110,000	2.33%
Local Funding	95,028	2.01%
<b>Total</b>	<b>\$ 4,717,062</b>	<b>100.00%</b>

In order to accomplish the Plan within the twelve-year schedule, a voter-approved Taxpayer Bill of Rights (TABOR), authorization of \$3.477 billion in principal and \$7.129 billion in total debt service must be obtained.

## The Plan – Projected Capital Costs

The District has proposed a \$4.7 billion Plan designed to transform urban mobility opportunity in the metropolitan Denver region within a twelve-year period. Unlike the traditional corridor-by-corridor approach, usually highly dependent on external funding from the Federal government, the District's Plan allows local policy makers and voters to direct the agenda in terms of project delivery and funding options. The Plan responds to the projected increase in District population to 3.39 million in 2025.

Integral to the Plan is the ability to simultaneously improve mobility throughout the region. This approach will not only address congestion needs, but will also provide an unprecedented economic stimulus to the region, providing a measure of protection against recession through 2017.

The Plan includes six new multi-modal corridors involving light rail, commuter rail and bus rapid transit improvements. Base bus service levels will increase by 1% per year between the years 2006-2020, and by 1.5% per year between 2021 and 2025. Overall, 2025 bus revenue service hours will increase by 30% over 2003 service levels. Significant expansions to the existing Southwest, Southeast, Central Platte Valley and Central corridors, parking enhancements and additional buses and LRVs for the current system are also funded.

Table 2-2 summarizes the projected capital costs of the Plan by corridor:

<b>Table 2-2</b> <b>FasTracks</b> <b>Projected Capital Costs by Corridor</b> <b>(Year of Expenditure \$ in Thousands)</b>	
<b>Corridor</b>	<b>Capital Cost</b>
Central Corridor/CPV Enhancements	\$ 118,442
East Corridor	702,108
Gold Line	463,455
I-225 Corridor	442,320
North Metro Corridor	428,104
Southeast Corridor Enhancements	183,020
Southwest Corridor Enhancements	164,058
US 36 Corridor/Longmont Extension	791,370
West Corridor	508,231
Other Items (Facilities, Denver Union Station, etc.)	915,954
<b>Total</b>	<b>\$ 4,717,062</b>

## Revenues

### Sales and Use Tax

Since inception, the primary funding source for the District has been a sales and use tax imposed on transactions within the District boundaries. Effective January 1, 1974, the District imposed a tax equal to 0.5%. On May 1, 1983, the tax was increased to 0.6% or six-tenths of one percent and the tax base was adjusted. The current tax generates revenues of \$210.447 million annually (2003).

As seen in Table 2-3, although revenues are down in 2002-2003, the District has experienced sales tax growth over the past decade up to 12.4% per annum.

Table 2-3 Growth in Sales/Use Tax Revenues 1992-2003 (Dollars in Thousands)		
Fiscal Year	Sales/Use Tax Revenues	Percentage Growth
1992	\$ 108,389	
1993	121,611	12.20%
1994	134,431	10.54%
1995	142,214	5.79%
1996	153,807	8.15%
1997	164,565	6.99%
1998	179,990	9.37%
1999	202,303	12.40%
2000	224,182	10.81%
2001	224,648	0.21%
2002	213,668	(4.89%)
2003	210,447	(1.51%)

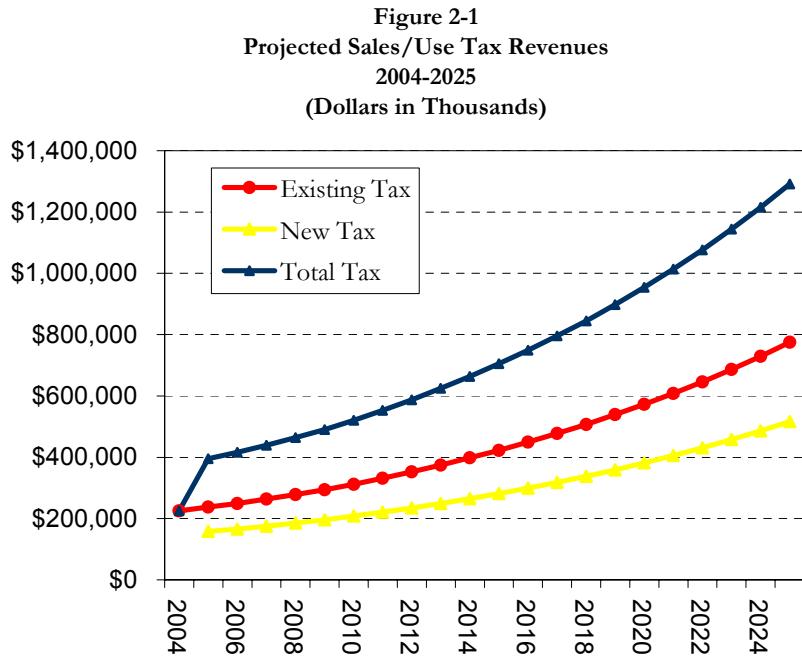
Source: RTD Comprehensive Annual Financial Reports for years ended December 31, 1992-2003

In November, 2003, voters in the City of Lone Tree approved annexation into the RTD District. In February, 2004, the RTD Board of Directors annexed the Park Meadows Mall into the District. The sales and use tax forecasts assume that RTD will begin collecting sales and use tax from Lone Tree as of January 1, 2004, and from Park Meadows as of July 1, 2004. This results in an increase of \$4.758 million to RTD's base collections in 2004, and an additional increase of \$1.257 million to RTD's base collections in 2005.

Fundamental to the Plan, is the assumption of a voter-approved increase in the sales and use tax during the November, 2004 election of an additional 0.4%. This would bring the total sales tax rate to 1%, equal to that imposed for transit in Dallas, Houston, and Los Angeles, Santa Clara, San Mateo Counties in California, and the total sales taxes for transportation in the San Francisco Bay Area Counties of Alameda, Contra Costa, and San Francisco.

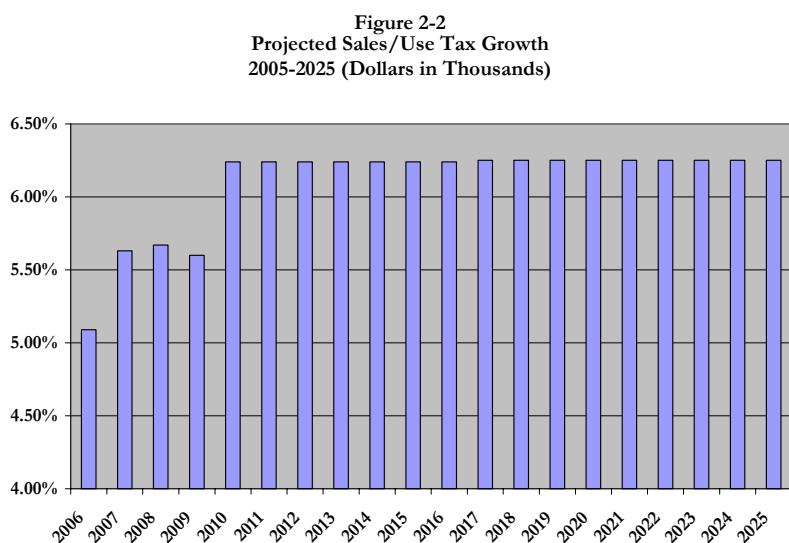
The 0.4% tax is assumed to be effective on January 1, 2005, and would initially generate an additional \$158.2 million in sales and use tax revenues annually. Both the new incremental tax and revenue from the existing tax are used to fund the Plan.

Figure 2-1 demonstrates the revenue potential from sales tax for the Plan:



The sales tax growth rates used by RTD to project revenue growth in the plan are based on two sources. Sales tax growth projections from 2004 through 2009 were based on the Colorado Legislative Council (CLC) forecasts. The sales tax growth rates for the years 2010 through 2025 were provided by AECOM which based their forecasts on data from the Center for Business and Economic Forecasting (CBEF). CLC growth forecasts, while for the entire state, are used in the report because the Denver region constitutes over half the population of the state.

Assumed growth rates are shown in Figure 2-2:



## **Local Contributions**

Beginning with the Central Platte Valley and the Southeast Corridor project, the District has established a policy of requiring a portion of major project costs to be paid by local jurisdictions.

This Plan assumes that this policy will continue and that impacted jurisdictions will contribute an amount in aggregate equal to 2.5% of the eligible corridor costs, which equates to 2.01% of total project costs. On a plan wide basis, the amount of this contribution is estimated to total \$95.03 million.

The source of funding for the local contribution is at the discretion of each local jurisdiction. Local contributions could consist of right-of-way dedications, permit fee waivers, cash contributions, corridor utility relocations as well as any other direct, project-related corridor contributions. Generally throughout the system, the financial benefits from transit development in terms of assessed valuations, enhanced development potential, reduced travel times and improved congestion accrue to the local communities.

On February 17, 2004, the RTD Board of Directors approved a resolution entitled "Regarding Board Commitments for FasTracks (Hold Harmless)". This action confirmed RTD's commitment to build each corridor's specific list of corridor improvements consistent with and as described in the FasTracks Plan and within the fiscal constraints and schedule of the plan subject to the completion of the environmental process and conformity with any federal Record of Decision for a corridor. It further formalized the commitment to analyze the Plan annually to determine current revenue projections from both local and federal sources. The resolution states, "If RTD revenues are better or worse than expected then all the corridors will be adjusted accordingly."

Additionally, the Hold Harmless resolution commits "that prior to construction, a corridor cost risk assessment and value engineering (will) be conducted to minimize the potential for cost overruns and schedule delays. Based on the results of both analyses, modifications to individual corridor project elements, service plans, and schedules may be necessary for all FasTracks corridors. This may be necessary so as to not impact the scheduled construction and operation of the remaining FasTracks corridors, thereby "holding harmless" those corridors. This information shall be reported annually to the general public.

Furthermore, the sixth point in the approved resolution reads as follows: "Construction of FasTracks committed improvements within a corridor will not start until there is a firm commitment of all required funding sources, be they private, local-match or federal monies and intergovernmental agreements are in place with local governments concerning permits, design and plan review proves for timely implementation."

## **Federal Funding**

Both the Southwest and the Southeast corridor projects were undertaken with assistance from the Federal Transit Administration in the form of New Start Grant funds. Under Federal procedures, once a project is qualified for funding, the FTA enters into a "Full Funding Grant Agreement" or FFGA. The Agreement sets forth the maximum amount of the Federal contribution, and the percentage of federal funding. In the case of the Southwest Corridor, the federal New Start percentage was 68% and in the case of Southeast the Federal percentage was 60% of the project costs.

The Plan assumes that only three corridors, the East, West and Gold Line, will seek federal discretionary funding through an FFGA. The total amount of Federal funding is assumed to be \$815.4 million in Federal New Start Grant funds and \$110.0 million of other Federal grant revenues. Of the \$110.0 million, the Plan includes \$50 million in federal assistance from FTA in the form of bus discretionary funds for Denver Union Station or for other bus projects such as vehicles and facilities. In addition, the Plan assumes \$60 million in federal flexible dollars through the DRCOG planning process between years 2010 and 2015 consistent with the District's past receipts. The New Start funding is assumed to equal to 49% of the project costs for each of the corridors.

The District has the option to focus Federal participation in other corridors, or to seek Federal funding for multiple corridors in response to Federal policy initiatives or funding availability in the future. The Federal transit program is currently subject to reauthorization. As with prior reauthorizations, the level of federal match is subject to change by the Congress. Although the statutory local match has been at 20% for some time, the practical match for competitive projects has been historically near the 40% level. Congress may change the statutory match in subsequent reauthorizations. Federal receipts are assumed to be capped at a reasonable appropriation level based on past RTD receipts of New Start Grant Funding and current Federal funding practices. Therefore the financial plan has accounted for instances when the Federal funding is received after the year in which the costs are incurred.

## **Interest Earnings**

During the construction period, the District will accumulate balances of both sales tax revenues as well as bond proceeds awaiting expenditures. In developing the Plan, debt issuances were scheduled every two years to allow the District to take advantage of federal arbitrage rules generally allowing local issuers to keep positive interest earnings if all bond proceeds are expended within a designated two-year test.

The Plan assumes investment revenues will be earned at a rate equal to 4.0%. Thus, with the exception of the variable rate debt, we have not assumed any net positive arbitrage on bond proceeds. Any such earnings would act as either additional revenues or as an offset against higher borrowing costs.

Sales tax cash balances have been managed to ensure a projected minimum of \$25 million in the Transit Development Reserve at the end of each year.

Between 2005 and 2017, investment earnings are projected to total \$234.34 million.

## **Farebox Revenue Forecasts**

### **Base System**

Base system farebox revenues were based on the forecast contained in RTD's 2004 Adopted Budget. This forecast was based on the 2003 Amended Budget forecast of farebox revenues, adjusted for the fare increase that occurred on January 1, 2004, and the additional service provided as of January 1, 2004 with the annexation of the city of Lone Tree into the RTD District.

Farebox revenue forecasts for the base system for the years 2005-2025 assumed growth based on population growth and service growth. Farebox revenues were assumed to increase with the rate of population growth each year, due to ridership increases associated with population growth. Additional increases were tied to increases in service, with farebox revenue assumed to increase at 75% of the systemwide average revenue per service hour with each increased hour of bus service provided. These adjustments were initially applied in constant 2004 dollars.

### **FasTracks Corridors**

For the FasTracks corridors, RTD prepared travel forecasts for the horizon years of 2015 and 2025. Both forecasts assumed the full build-out of the FasTracks rapid transit system. Although some lines open later than 2015, these forecasts allowed RTD to understand ridership growth as a result of population and employment growth between those horizon years.

Second, RTD combined the construction schedule with the forecasts. Passenger fare revenues were assumed to start six months after operating costs are incurred. This reflects the fact that each corridor will incur operating costs for six months of testing and start-up, before passenger fares are collected.

Third, existing average fares paid by class of service were applied to the ridership forecasts for each corridor in constant 2001 dollars. Based upon the forecast boardings by station, RTD estimated the percentages of riders on each corridor expected to be paying local, express, regional, and skyRide fares. Table 2-4 shows the 2001 average fare paid by class of service.

Table 2-4 RTD Average Fare by Service Class 2001 Dollars	
Service Class	Average Fare Paid
Local	\$0.55
Express	\$1.30
Regional	\$2.02
skyRide	\$2.06

Applying the average fare paid by service class to the forecast boardings by station and distance from downtown Denver, the average fares per boarding shown in Table 2-5 were generated for each corridor:

Table 2-5 FasTracks Average Fare Paid by Corridor 2001 Dollars	
Corridor Segment	Average Fare Paid
Central	\$0.55
Southwest	\$1.13
Southwest Extension	\$1.13
Central Platte Valley	\$0.93
Southeast without Lone Tree	\$1.15
Lone Tree	\$1.15
West	\$0.61
US 36 Rail	\$1.74
US 36 BRT	\$1.72
East	\$1.49
40 <sup>th</sup> /40 <sup>th</sup> Extension	\$0.55
I-225	\$0.96
North Metro	\$1.03
Gold Line	\$0.63

The travel forecasting model produces daily ridership estimates. The fare recovery rates are applied, then the daily fare totals are annualized. The annualization factor was adjusted to ensure that it did not overestimate fare revenues for existing years of 2001 and 2002, and also cross-checked for reasonableness. The Federal Transit Administration allows annualization factors of up to 300x daily ridership in the Federal New Starts process. FasTracks was calibrated at 288x daily ridership from the model, well under the allowable standard.

### Fare Increases

The initial farebox revenue projections were developed in constant year dollars, and adjusted to incorporate fare increases to keep pace with inflation. RTD fiscal policies state that RTD's six-year Transit Development Program (TDP) will include periodic fare increases to permit fare revenues to keep pace with cost increases, as measured by the Denver-Boulder Consumer Price Index (CPI-U). Over the past 15 years, the timing of these increases has ranged from annually, as in the years 2002-2004, to an eight-year period between the 1989 and 1997 fare increases.

The 2004-2009 TDP, as adopted by the Board of Directors in August 2003, assumed fare increases in 2006 and 2009 to keep pace with inflation. These fare increases were assumed to yield an 8%

increase in fare revenue after any ridership loss caused by the fare increases. The FasTracks farebox revenue forecasts assume that these fare increases will be implemented, and that similar fare increases will be implemented every third year after 2009. Therefore, the constant dollar revenue forecasts were adjusted to nominal dollars by assuming an 8% revenue increase every third year, beginning in 2006.

## Debt Financing Requirements

Not surprisingly, a plan to accomplish \$4.7 billion in transit development over twelve years requires significant debt financing.

Historically, the District has utilized two primary debt-financing techniques: Sales Tax Revenue Bonds and Certificates of Participation (COPs). This section describes a possible scenario for utilizing these methods of financing, along with other borrowing methods including commercial paper and federal loans. Provided RTD keeps within voter approved ballot authorizations for debt and repayment, RTD may use any combination of legally available financing methods and the amounts set forth in the discussion below are subject to change.

The District currently has \$273,415,000 in sales tax bonds outstanding. In August 2001, a commercial paper program, secured by sales tax revenues on a junior lien to the fixed rate sales tax bonds was implemented in the amount of \$118.5 million. Of this amount, \$92.5 million has been issued.

Table 2-6 shows the debt service requirements for the existing bonds, and estimated debt service requirements for the currently authorized bonds.

Table 2-6 Senior Lien Sales Tax Bonds Existing and Upcoming Debt Service Requirements (Dollars in Thousands)			
Year	Series 2004		
	Existing Bonds	(Estimated)	Total Debt Service
2004	\$28,870	\$1,019	\$29,889
2005	28,858	6,114	34,972
2006	27,377	6,114	33,491
2007	27,382	6,114	33,496
2008	27,376	10,524	37,900
2009	25,380	10,522	35,902
2010	25,387	10,524	35,911
2011	25,756	10,523	36,279
2012	25,754	10,523	36,277
2013	18,922	10,524	29,446
2014	18,920	10,525	29,444
2015	18,922	10,525	29,447
2016	18,918	10,524	29,442
2017	18,916	10,525	29,441
2018	18,920	10,523	29,443
2019	18,919	10,522	29,441
2020	18,921	10,526	29,447
2021	13,435	10,523	23,958
2022		10,523	10,523
2023		10,524	10,524
2024		10,525	10,525
Total	\$406,934	\$198,264	\$605,198

Of the \$118.5 million authorized commercial paper, it is estimated that \$92.5 million will be issued, with interest debt service on the CP estimated to be \$3.1 million annually and the principal scheduled to be retired between 2006 and 2008.

The District has used COPs, which are a form of lease purchase debt for financing buses and rail vehicles. COPs are not secured by a pledge of the sales tax revenues themselves, but represent a lease secured by the equipment and the District's commitment to appropriate payments in each annual budget.

Table 2-7 shows the current debt service requirements related to the District's outstanding and projected COPs:

<b>Table 2-7</b> <b>Existing and Projected Certificates of Participation</b> <b>Debt Service Requirements</b> <b>(Dollars in Thousands)</b>			
<b>Year</b>	<b>Base Rentals</b>	<b>Series 2016(Estimated )</b>	<b>Total Debt Service</b>
2004	\$21,218		\$21,218
2005	21,213		21,213
2006	21,212		21,212
2007	21,213		21,213
2008	21,206		21,206
2009	21,198		21,198
2010	21,197		21,197
2011	21,191		21,191
2012	21,195		21,195
2013	15,907		15,907
2014	17,115		17,115
2015	17,355		17,355
2016	17,375	\$915	18,290
2017	17,302	5,591	22,893
2018	17,317	5,588	22,905
2019	17,333	5,590	22,923
2020	17,348	5,587	22,935
2021	22,859	5,580	28,439
2022	42,833	5,579	48,412
2023		5,577	5,577
2024		5,576	5,576
2025		5,574	5,574
2026		5,572	5,572
2027		5,569	5,569
2028		5,566	5,566
<b>Total</b>	<b>\$393,587</b>	<b>\$67,864</b>	<b>\$461,451</b>

Note: This table reflects the debt service schedule shown in the COP documents.

The Plan assumes that new debt authorization will be sought from the voters in 2004. Bonds to finance the Plan will be secured by the full 1% sales tax that will then be in effect.

Sales tax revenue bonds are provided as the “backbone” of the financing program. This is because senior lien sales tax bonds provide the strongest security, and thus lowest long-term borrowing costs to the District.

Sales tax revenue bond issues totaling \$2.52 billion have been projected in accordance with the schedule in Table 2-8:

<b>Table 2-8</b> <b>Projected Senior Lien Sales Tax Bond Issuances</b> <b>FasTracks Related</b> <b>(Dollars in Thousands)</b>	
<b>Year</b>	<b>Par Amount</b>
2007	\$205,270
2009	693,225
2011	819,775
2013	800,225
<b>Total</b>	<b>\$2,518,495</b>

Bond issues are staggered in two-year increments in order to reduce costs associated with issuance and to provide the opportunity for the District to take advantage of arbitrage earnings opportunities. Bonds are assumed to be issued on a fixed rate basis, but this is not required. An assumed TIC (True Interest Cost) of 6.354% representing current rates plus a margin in excess of 100 basis points was used in the Plan. For Plan purposes, all bonds were assumed to be issued on January 1 of their respective years of issuance and have a thirty year maturity.

An additional \$213.5 million in debt was assumed to be issued as COPs. COP debt service is not covered by TABOR restrictions.

Expected COP issuances related to the Plan are shown in Table 2-9:

<b>Table 2-9</b> <b>Expected COP Issuances</b> <b>FasTracks Related</b> <b>(Dollars in Thousands)</b>	
<b>Year</b>	<b>Par Amount</b>
2011	\$76,625
2013	106,025
2015	11,350
2017	19,450
<b>Total</b>	<b>\$213,450</b>

In the Southeast Corridor Plan, the District addressed the problem of lagging Federal grant receipts through the creation of a commercial paper program. Commercial paper allows the District to provide short term, interim financing of the Federal cash flow and thus keep the project on schedule.

While it is currently impossible to predict the ability of the FTA to meet its cash flow requirements in the 2007-2017 timeframe, it is highly probable that some form of interim financing will be required.

As with the Southeast Corridor Plan of Finance, a Tax Exempt Commercial Paper Program (CP) is recommended as an interim funding vehicle to ensure delays in the receipt of Federal Funds do not delay the construction of the corridors.

Commercial paper is a commonly used financing tool that allows issuers to “ramp-up” their debt for a term ranging from one day to 270 days. This flexibility makes it possible for issuers to keep the debt

outstanding for only the time it is needed, until permanent funds are received. In recent years, nearly every transit agency undertaking a new start project with federal funding as identified the need for an interim funding vehicle such as commercial paper. Commercial paper may be issued using any legally available technique for rate determination.

In the case of the FasTracks Plan, \$815.4 million of commercial paper is assumed. This will fund expected Federal commitments with the funding schedule varying for each corridor. In other words, the Plan allows federal support to lag the project cash flow requirements without delaying the construction schedule.

### **TIFIA Loan**

TIFIA, or the Transportation Infrastructure Finance and Innovation Act of 1998 provides a new source of project financing to eligible projects. Under the provisions of TIFIA, the US DOT can provide direct loans, credit enhancement or lines of credit.

To date, TIFIA has approved financing instruments totaling \$3.59 billion for 11 projects. Transit projects that have utilized TIFIA include Washington Metro, the Tren Urbano project in Puerto Rico, the Staten Island Ferries, Miami Intermodal Center and the New York Penn Station renovations.

Eligible projects must meet some specific federal criteria. These include the following:

- Project must be at least \$100 million
- TIFIA support limited to 33% of project costs
- Project adheres to federal project requirements (labor, civil rights, etc.)
- Repayment must be from project revenues or non-federal tax sources
- Project sponsors senior debt must be investment grade

In the case of the Plan, we have recommended a loan in the amount of \$142.95 representing 33% of the North Metro project costs. (The District may choose to program a different corridor for federal participation depending on project delivery strategy at the time of implementation).

The advantage of the TIFIA program is it allows the District to borrow on a subordinate basis to its other debt. The financing rate is based on the 30-year Treasury bond rate, which is currently 5.07%. (The basis of the rate will be related to a spread over the SLGS rate as Treasury phases out the 30-year bond but will be comparable). For purposes of this plan a 6.00% TIFIA rate was assumed.

Repayment of the loan may be deferred to accommodate senior debt requirements and amortized over 35 years. Loans may also be repaid early without penalty. While the interest rate is higher than traditional tax-exempt debt, it is low compared to other deeply subordinate debt options and it provides excellent flexibility.

The current federally adopted selection criteria for TIFIA projects include the following eight elements:

- (1) The extent to which the project is nationally or regionally significant, in terms of generating economic benefits, supporting international commerce, or otherwise enhancing the national transportation system (20 percent);
- (2) The creditworthiness of the project, including a determination by the Secretary that any financing for the project has appropriate security features, such as a rate covenant, to ensure repayment (12.5 percent);
- (3) The extent to which such assistance would foster innovative public-private partnerships and attract private debt or equity investment (20 percent);
- (4) The likelihood that such assistance would enable the project to proceed at an earlier date than the project would otherwise be able to proceed (12.5 percent);
- (5) The extent to which the project uses new technologies, including Intelligent Transportation Systems (ITS) that enhance the efficiency of the project (5 percent);

- (6) The amount of budget authority required to fund the Federal credit instrument made available (5 percent);
- (7) The extent to which the project helps maintain or protect the environment (20 percent);
- (8) The extent to which such assistance would reduce the contribution of Federal grant assistance to the project (5 percent).

The TIFIA program, like the FTA program is subject to reauthorization, and its availability to provide support to the Plan is dependent on its reauthorization.

## TABOR Requirements

The Taxpayer's Bill of Rights (TABOR), or Article X, Section 20 of the Colorado Constitution, approved by Colorado voters in November 1992, restricts the ability of the District to enter into a multi-year fiscal obligation without voter approval unless there are adequate present cash reserves. TABOR also requires voter approval in advance for: (i) any increase in the District's revenues and spending from one year to the next in excess of a specified growth rate, (CPI plus a growth factor based on net increase in the value of new taxable property) (ii) any new tax or tax increase.

The Plan is premised on voters approving a ballot issue in the November 2004 election the wording of which was established by the Colorado legislature. It would give the District the necessary authority to issue debt, increase the current tax rate by 0.4% and keep the revenue to build the system. A portion of the tax increase may remain after the system is built, as operating costs for the expanded system may be higher than for the current system.

While the increase in the authorized tax rate is fairly straight forward, the authorization for debt must estimate both the principal amount of debt issued and the expected interest rate for transactions extending through 2013. COPs have not been treated as debt subject to TABOR approval by the Colorado courts and they are not included in the voter authorization.

There are three elements of the financial plan subject to the TABOR requirements: fixed rate bonds, commercial paper and the proposed TIFIA loan. All of the estimated principal and interest for these items are included in the amounts the voters will be asked to approve. How the principal and interest is allocated among these different financing mechanisms is subject to change. The total amount of principal and debt service the voters will be asked to approve is shown in Table 2-10.

<b>Table 2-10</b> <b>TABOR Authorization</b> <b>Revenue Bonds, Commercial Paper and TIFIA Issuances</b> <b>(Dollars in Thousands)</b>	
Principal	\$3,476,872
Total Debt Service	\$7,129,398

As with any long range capital improvement plan, the actual implementation of the Plan is dependent on project costs, inflation factors, revenue trends, and interest rate environment in the future. These factors can never be predicted over a thirteen year horizon with exact precision.

For this reason, the Plan reflects significant contingencies. For example, the project cost estimates contain a price contingency. Interest rates have been assumed to be over 150 basis points higher than the Colorado municipal market data tax exempt current market rate of 4.81%. Variable interest rates have been assumed to be more than 200 basis points over the current Bond Market Association (BMA) index rate of 1.02%.

The FasTracks cost estimates also include contingency factors to account for unforeseen changes in project scope or unit cost increases beyond general rates of inflation. The contingency was applied to the items with the greatest risk factors for unforeseen cost changes, with factors varying by the assessment of potential risk. Table 2-11 shows the overall contingency factors by cost element.

Table 2-11 FasTracks Contingency Factors by Cost Element	
Cost Element	Contingency Factor
Construction Costs	25%
Right-of-Way Costs	63%
Vehicle Costs	13%

Thus, the FasTracks cost estimates used in the cash flow already include a total of \$573 million in uninflated dollars for contingency.

The Plan also automatically assumes that Federal grants will be received two years after initial eligibility. To the extent Federal funding is provided on a more-timely basis, some of the debt assumed in the Plan will be unnecessary.

Should the District be faced with a significant economic recession, or find project costs are substantially higher than are currently estimated, and that such costs exceed the contingency budget, the District has several options to address this situation. These include delaying projects, modifying the scope of certain projects, seeking additional Federal or local funding or seeking additional voter approved funding options. Prior to taking any of these actions, the Board will hold full and complete public hearings and provide sufficient notice to the stakeholders in the region.

# Implementation Schedule

Corridor	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
West	EIS/PE	ROW	RFP	Final Design	Bid		Construction				1				
US 36	EIS/PE	ROW	RFP	Final Design	Bid		Construction				1				
East	EIS/PE	ROW	RFP	Final Design	Bid		Construction				1				
North Metro	Corridor Scoping	RFP	EIS/PE	ROW	RFP	Final Design	Bid	Construction			1				
I-225	Corridor Scoping	RFP	EIS/PE	ROW	RFP	Final Design	Bid	Construction			1				
Gold Line	Corridor Scoping	RFP	EIS/PE	ROW	RFP	Final Design	Bid	Construction			1				
Lone Tree				RFP	EA/PE	RFP	Final Design	Bid	Construction		1				
40th/40th Ext.	EIS/PE	RFP	ROW-Prep-FD-BD		Final Design	Bid	Construction	1							
Southwest Ext.				RFP	EA/PE	RFP	Final Design	Bid	Construction		1				
US 36 BRT	EIS/PE	Final Design	Slip Ramps	2	Final Design	Bid	Station and HOV Lane Construction				1				
Union Station	EIS/PE	RFP	Final Design		Bid	Construction		3	4						

*Northeast (Adams County) Corridor right-of-way preservation option negotiation starting in 2006 with final expenditure budgeted through 2010.*

1. Testing and startup phase.
2. Start up phase for BRT Slip Ramps
3. Denver Union Station LRT testing and startup phase.
4. Denver Union Station Commuter Rail testing and startup phase.

*Note: Financially constrained schedule based on conservative revenue forecasts consistent with RTD's FasTracks SB 208 Financial Plan and state forecasts. A combination of factors could push opening days earlier, i.e. RTD and Federal revenue receipts higher than forecast, costs lower than forecast, receipts of SB 1 revenues and third party financial partnering. US 36 timeframe for construction of the HOV lanes is dependent on funding from CDOT.*

*Relocation of the railroad operating facilities for each affected corridor is required prior to construction of RTD rail corridors. Right-of-way acquisition is done during Final Design.*